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Arithmetic,	Gardening,	Law,	Perspective,
Astronomy,	Gauging,	Logic,	Philosophy,
Book-keeping,	Geography,	Maritime Affairs,	Physic,
Biography,	Geometry,	Military Affairs,	Pneumatics,
Botany,	Grammar,	Mathematics,	Rhetoric,
Catoptrics,	Gunnery,	Mechanics,	Sculpture,
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Cosmography,	Husbandry,	Music,	Theology, &c. &c.

The whole greatly improved and modernized from every Dictionary that hath preceded it, and ornamented with upwards of Two Hundred Figures, necessary to illustrate and embellish the Work.

The Historical, Theological, Philosophical, Biographical, and Grammatical Parts

By the Rev. PERCIVAL PROCTOR, M. A.

The Astronomical, Mechanical, and every other Branch of the Mathematics,

By WILLIAM CASTIEAU,

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The other Articles by Gentlemen particularly conversant in the respective Subjects they have undertaken to explain.

VOLUME IV.

L O N D O N :

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THE MODERN DICTIONARY OF ARTS AND SCIENCES

✧ Those Articles which are marked thus * are totally omitted in every other Dictionary of Arts and Sciences.

Q U A

Q A consonant, and the sixteenth letter of the English alphabet, and though it is not in the old Greek or Latin alphabet, is yet derived from the more ancient Hebrew Δ, by turning the character, and making the angular apex round, and carrying the perpendicular part obliquely under the round one; and from thence also the modern Hebrew character ק koph of the same letter. In the Latin, the use or disuse of the Q seems to have been so little settled, that the poets used the Q or C indifferently, as best suited their measures; it being a rule, that the C imported them to be divided. In the French, the sound of the Q and K are so nearly the same, that some of the nicest authors think the former might be spared.

In English, the Q is formed in the voice in a different manner from K, the cheeks being contracted, and the lips, especially the under one, put into a canular form for the passage of the breath. It is, however, never founded alone, but in conjunction with u after it, either in Latin or English, as in *quantum*, *queen*, &c. and it never ends any English word. As a numeral, Q stands for 500; and with a dash over it, thus $\bar{Q}$, for 500000. Used as an abbreviature, *q* signifies *quantity* or *quantum*: thus, among physicians,

Q

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q. pl. is *quantum placit*, that is, as much as you please; and *q. s.* *quantum sufficit*, that is, as much as is necessary; *Q. E. D.* among mathematicians, is *quod erat demonstrandum*, that is, which was to be demonstrated; and *Q. E. F.* *quod erat faciendum*, that is, which was to be done. *Q. D.* among grammarians, is *quasi dictum*, that is, as if it were said, or, as who should say.

QUACK, the same with empiric. See *Empiric*.

QUADRAGESIMA, a denomination given to Lent, from its consisting of forty days. See *Lent*.

Hence also the first Sunday of Lent is called Quadragesima Sunday, and the three preceding Sundays, Quinquagesima, Sexagesima, and Septuagesima.

QUADRANGLE, in geometry, the same with quadrilateral figure, or one consisting of four sides and four angles.

QUADRANT, *Quadrans*, in geometry, an arch of a circle, containing 90°, or one fourth part of the whole periphery. The space or area included between this arch and two radii drawn from the center, to each extremity thereof, is called a quadrant, or, more properly, a quadrantal space, as being a quarter of an entire circle.

QUADRANT also denotes a mathematical instrument, of great use in astro-

A 2 nomy,

onomy, navigation, &c. for taking of altitudes, angles, &c. It is variously contrived, according to the various uses it is intended for; but they all have this in common, that they consist of a quarter of a circle, whose limb is divided into 90° ; some have a plummet suspended from the center, and furnished with pinnulae, or sights to look through. The principal and most useful quadrants are the common or surveying quadrant, astronomical quadrant, Davis's quadrant, Hadley's quadrant, horodical quadrant, Gunter's quadrant, Sutton's or Collins's quadrant, and the sinical quadrant.

1. The common or surveying quadrant is made of brass, wood, or any other solid substance; the limb of which is divided into 90° , and each of these farther divided into as many equal parts as the space will allow, either diagonally or otherwise. On one of the semi-diameters are fitted two moveable sights, and to the center is sometimes also fixed a label, or moveable index, bearing two other sights; but in lieu of these last sights there is sometimes fitted a telescope; also from the center there is hung a thread with a plummet; and on the under side, or face of the instrument, is fitted a ball and socket; by means of which it may be put into any position. The general use of it is, for taking angles in a vertical plane, comprehended under right lines going from the center of the instrument, one of which is horizontal, and the other is directed to some visible point. But besides the parts already described, there is frequently added on the face near the center, a kind of compartment, called the quadrant, or geometrical square; as in the figure. This quadrant may be used in different situations: for observing heights or depths, its plane must be disposed perpendicularly to the horizon; but to take horizontal distances, its plane is disposed parallel thereto: again, heights and distances may be taken two ways, viz. by means of the fixed sights and plummet, or by the label.

Use of the Surveying QUADRANT.—To take the height or depth of an object, with the fixed sights and plummet, place the quadrant vertically, and the eye under the sight next the arch of the quadrant; thus direct the instrument to the object, suppose the top of a castle, &c. till the visual rays thereof strike through the sights upon the eye. This done, the portion of the arch intercepted between the thread and the semi-diameter, where-

on the sights are fastened, shews the complement of the object's height above the horizon, or its distance from the zenith; and the other portion of the arch, between the thread and the other semi-diameter, shews the height itself of the object above the horizon. The same arch likewise gives the quantity of the angle made by the visual ray, and a horizontal line parallel to the base of the tower. To observe depths, the eye must be placed over that sight next the center of the quadrant. From the height or depth of the object, in degrees thus found, which suppose $35^\circ 35'$: and the distance of the foot of the object from the place of observation carefully measured, which suppose 47 feet; its height or depth in feet, yards, &c. is easily determined by the most common case in trigonometry. For we have here in a triangle one side given; namely, the line measured, and we have all the angles; for that of the castle is always supposed a right angle; the other two, therefore, are equal to another right angle; but the angle observed is $35^\circ 35'$, therefore the other is $54^\circ 25'$.

The case then will be reduced to this; as the sine of $54^\circ 25'$, is to 47 feet; so is the sine of $35^\circ 35'$, to a fourth term thirty-three feet and a half; to which add the height of the observer's eye, suppose five feet, the sum thirty-eight feet and a half is the height of the castle required. As to the taking of altitudes, see *Altitude*.

2. *Astronomical QUADRANT*, is an instrument contrived to take the altitude, &c. of the heavenly bodies in a very accurate manner. This instrument is generally made of brass, or wooden bars faced with plates of iron, having its limb divided either diagonally or otherwise into degrees, minutes, and seconds, if possible, with two telescopes, one fixed on the side of it, and the other moveable upon the center, by means of the screw.

3. *Davis's QUADRANT*, so called from its inventor Captain Davis; and is no other than a common quadrant, lessened in one part of the arch, by supposing it to be divided into two different arches by a concentric circle, whereby the instrument becomes more portable.

4. *Gunter's QUADRANT*, so called from its inventor Edmund Gunter. Besides the apparatus of other quadrants, it has a stereographical projection of the sphere on the plane of the equinoctial. It has also a calendar of the months next to the divisions of the limb.

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Use of Gunter's QUADRANT. 1. To find the sun's meridian altitude for any given day, or the day of the month for any given meridian altitude. Lay the thread to the day of the month in the scale next the limb; and the degree it cuts in the limb, is the sun's meridian altitude. Thus the thread being laid on the 15th of May cuts $59^{\circ} 30'$, the altitude sought; and contrarily, the thread being set to the meridian altitude, shews the day of the month. 2. To find the hour of the day. Having put the bead, which slides on the thread, to the sun's place in the ecliptic, observe the sun's altitude by the quadrant; then, if the thread be laid over the same in the limb, the bead will fall upon the hour required. Thus, suppose on the 10th of April, the sun being then in the beginning of Taurus, I observe the sun's altitude by the quadrant to be 36° ; I place the bead to the beginning of Taurus in the ecliptic, and lay the thread over 36° of the limb; and find the bead to fall on the hour line marked 3 and 9; accordingly the hour is either 9 in the morning, or 3 in the afternoon. Again, laying the bead on the hour given, having first rectified, or put it to the sun's place, the degree cut by the thread on the limb gives the altitude. Note, the bead may be rectified otherwise, by bringing the thread to the day of the month, and the bead to the hour-line of 12. 3. To find the sun's declination from his place given, and contrariwise. Set the bead to the sun's place in the ecliptic, move the thread to the line of declination E T, and the bead will cut the degree of declination required. Contrarily, the bead being adjusted to a given declination, and the thread moved to the ecliptic, the bead will cut the sun's place. 4. The sun's place being given, to find his right ascension, or contrarily. Lay the thread on the sun's place in the ecliptic, and the degree it cuts on the limb is the right ascension sought. Contrarily, laying the thread on the right ascension, it cut's the sun's place in the ecliptic. 5. The sun's altitude being given, to find his azimuth, and contrariwise. Rectify the bead for the time, as in the second article and observe the sun's altitude; bring the thread to the complement of that altitude; thus the bead will give the azimuth sought among the azimuth lines. 6. To find the hour of the night from some of the five stars laid down on the quadrant. 1. Put the bead to the star you would observe, and find how many hours it is off

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the meridian, by article 2. Then, from the right ascension of the star subtract the sun's right ascension converted into hours, and mark the difference: which difference, added to the observed hour of the star from the meridian, shews how many hours the sun is gone from the meridian, which is the hour of the night. Suppose on the 15th of May the sun is in the 4th degree of Gemini, I set the bead to Arcturus; and, observing his altitude, find him to be in the west about 52° high, and the bead to fall on the hour-line of 2 in the afternoon; then will the hour be 11 hours 50 minutes past noon, or 10 minutes short of midnight; for 62° , the sun's right ascension, converted into time, make 4 hours 8 minutes, which subtracted from 13 hours 58 minutes, the right ascension of Arcturus, the remainder will be 9 hours 50 minutes, which added to 2 hours, the observed distance of Arcturus from the meridian, shews the hour of the night to be 11 hours 50 minutes.

5. *Hadley's QUADRANT*, the most useful instrument for taking altitudes at sea, yet extant. It has its name from its inventor, J. Hadley, Esq.

6. *Sutton's QUADRANT*, sometimes called *Collins's Pocket QUADRANT*, is a stereographic projection of one quarter of the sphere, between the tropics, upon the plane of the ecliptic, the eye being in its north pole it is fitted to the latitude of London. The lines, running from the right hand to the left, are parallels of altitude; and those crossing them are azimuths. The lesser of the two circles, bounding the projection, is one fourth of the tropic of Capricorn; the greater is one fourth of that of Cancer. The two ecliptics are drawn from a point on the left edge of the quadrant, with the characters of the signs upon them; and the two horizons are drawn from the same point. The limb is divided both into degrees and time; and by having the sun's altitude, the hour of the day may be found here to a minute.

The quadrantal arches next the center contain the calendar of months; and under them, in a nother arch is the sun's declination.

On the projection are placed several of the most noted fixed stars between the tropics; and the next below the projection is the quadrant and line of shadows.

To find the time of the sun's rising or setting, his amplitude, his azimuth, hour of the day, &c. by this quadrant: Lay the

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the thread over the day and the month, and bring the bead to the proper ecliptic, either of summer or winter, according to the season; which is called rectifying; then, moving the thread, bring the bead to the horizon, in which case the thread will cut the limb in the time of the sun's rising or setting, before or after six; and at the same time the bead will cut the horizon in the degrees of the sun's amplitude.

Again, observing the sun's altitude with the quadrant, and supposing it found 45° on the 5th of May, lay the thread over the sixth of May, bring the bead to the summer ecliptic, and carry it to the parallel of altitude 45° , in which case the thread will cut the limb at $55^\circ 15'$, and the hour will be seen among the hour-lines to be either 41 past nine in the morning, or 19 past two in the afternoon.

Lastly, the bead among the azimuths shews the sun's distance from the south $30^\circ 41'$.

But note, that if the sun's altitude be less than what it is at six o'clock, the operation must be performed among those parallels above the upper horizon; the bead being rectified to the winter ecliptic.

SIXED QUADRANT, consists of several concentric quadrantal arches, divided into eight equal parts by radii, with parallel right lines crossing each other at right angles.

Gunter's QUADRANT, sometimes called Gunner's square, is that used for elevating and pointing cannon, mortars, &c. and consists of two branches either of brass or wood, between which is a quadrantal arch divided into 90° , beginning from the shorter branch, and furnished with a thread and plummet, as represented in the plate above referred to. The use of the Gunner's quadrant is extremely easy; for if the longest branch be placed in the mouth of the piece, and it be elevated till the plummet cut the degree necessary for this proposed object, the thing is done. Sometimes on one of the surfaces of the long branch, are noted the division of diameters, and weights of iron bullets, as also the bores of pieces.

QUADRANT of Altitude, is an appendage of the artificial globe, consisting of a lamina, or slip of brass, the length of a quadrant of one of the great circles of the globe, and graduated. At the end, where the division terminates, is a nut riveted on, and furnished with a screw, by means whereof the instrument is fitted

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on to the meridian, and movable round upon the rivet, to all points of the horizon, as represented in the figure referred to. Its use is to serve as a scale in measuring of altitudes, amplitudes, azimuths, &c. See *Globe*.

QUADRANTAL TRIANGLE, a spherical triangle, one of whose sides at least is a quadrant of a circle, and one of its angles a right angle. See *Triangle*.

QUADRAT, *Quadratum*, a mathematical instrument, called also a geometrical square, and line of shadows: it is frequently an additional member on the face of the common quadrant, as also on those of Gunter's and Sutton's quadrant.

QUADRAT, in printing, a piece of metal cast in the same manner as the letters, to fill up the void spaces between words, &c. There are quadrats of different sizes, as m quadrats, n quadrats, &c. which are, respectively, of the dimensions of these letters.

QUADRATIC Equation, in algebra, is that which involves one unknown quantity, and, at the same time, involves the square of that quantity, and the product of it multiplied by some known quantity.—This kind of equations may be resolved by the following rule:

1. Transpose all the terms that involve the unknown quantity to one side, and the known terms to the other side of the equation.

2. If the square of the unknown quantity is multiplied by any coefficient, you are to divide all the terms by that coefficient; that the coefficient of the square of the unknown quantity may be an unit.

3. Add to both sides the square of half the coefficient prefixed to the unknown quantity itself, and the side of the equation, that involves the unknown quantity, will then be a complete square.

4. Extract the square root from both sides of the equation, which you will find, on one side, always to be the unknown quantity with half the fore-said coefficient subjoined to it; so that by transposing this half, you may obtain the value of the unknown quantity expressed in known terms.

Thus, suppose $y^2 + 2ay = b$,
Add the square of a to both sides of the equation, we have $y^2 + 2ay + a^2 = b + a^2$; extract the root $y + a = \sqrt{b + a^2}$. Trans. a , and $y = \sqrt{b + a^2} - a$.
Let $yz - 2ay = b$, then $yz - 2ay + a^2 = b + a^2$ and $y - a = \sqrt{b + a^2}$; hence $y = \sqrt{b + a^2} + a$.

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Let $xy - y^2 = b$, then $y^2 - 2xy = -b$, and by adding the square of a to both sides, we have $y^2 - 2xy + aa = aa - b$, and $y = a + \sqrt{aa - b}$.

QUADRATING of a Piece, among gunners, the due placing of a piece of ordnance, and poising it in its carriage, and having its wheels of an equal height, &c. See *Gunnery*.

QUADRATIX, in geometry, a mechanical line, by means whereof we can find right lines equal to the circumferences of circles, or other curves, and their several parts.

QUADRATRIX of Dinostrates, so called from its inventor Dinostrates, is a curve, whereby the quadrature of the circle is effected mechanically.

QUADRATURE, *Quadratura*, in geometry, the art of squaring, or reducing a figure to a square. See *Circle*, *Curves*, *Fluxions*, *Series*, &c.

QUADRATURE, in astronomy, that aspect of the moon when she is 90° distant from the sun; or when she is in a middle point of her orbit, between the points of conjunction and opposition, namely, in the first and third quarters. See *Moon*.

QUADRATURE-LINES, are two lines placed on Gunter's sector: they are marked with Q , and 5, 6, 7, 8, 9, 10: of which Q signifies the side of the square; and the other figures the sides of polygons of 5, 6, 7, &c. sides. S , on the same instrument stands for the semi diameter of a circle, and 90 for a line equal to 90° in circumference.

QUADRILATERAL, in geometry, a figure whose perimeter consists of four right lines, making four angles; whence it is also called a quadrangular figure. The quadrilateral figures are either a parallelogram, trapezium, rectangle, square, rhombus, or rhomboides.

QUADRUPEDS, in zoology, a class of land animals, with hairy bodies, and four limbs or legs proceeding from the trunk of their bodies: add to this, that the females of this class are viviparous, or bring forth their young alive, and nourish them with milk from their teats. This class, though still numerous enough, will be considerably lessened in number, by throwing out of it the frog, lizard, and other four-footed amphibious animals. See *Amphibious*.

On the other hand, it will be increased by the admission of the bat; which, from its having the fore-feet webbed with

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a membrane, and using them as birds do their wings in flying, has erroneously been ranked among the bird-kind.

Linnæus subdivides the quadruped class into six orders, which he characterizes from the number, figure, and disposition of their teeth. The first order he calls anthropomorpha, from their resemblance to the human shape: these have four fore-teeth in each jaw. The fereæ, or beasts of prey, make the second order, and are distinguished by having six sharp-pointed fore-teeth in each jaw, and very long canine teeth. The third order, denominated agria, is sufficiently distinguished by having no teeth at all. The glires make the fourth class, and are distinguished by having the fore teeth only two in number, and those prominent. The pecora constitute the fifth order, and have no fore-teeth at all in the upper jaw, and the fore-teeth in the lower jaw are six. The sixth and last order is that of the jumenta, the teeth of which are few in number, and disposed in an irregular manner, quite different from that of the five preceding orders.

QUADRUPLE, a sum or number multiplied by four, or taken four-times.

QUÆSTUS, in law, signifies whatever a person has by purchase; as hereditas denotes that which one has by descent, or hereditary right.

QUAKERS, a religious sect which made its first appearance in England during the interregnum; so called, in derision, from certain unusual tremblings with which they were seized at their first meetings. Their founder was George Fox, a shoemaker, born at Drayton, in Leicestershire; who, while he was working at his trade, used to meditate much on the scriptures: at length he began to see visions, and set up for a preacher. He proposed but few articles of faith, insisting chiefly on moral virtue, mutual charity, the love of God, and a deep attention to the inward motions and secret operations of the spirit. He required a plain simple worship, and religion without ceremonies, making it a principal point to wait in profound silence the directions of the Holy Spirit. Quakers were at first guilty of some extravagances; but these wore off, and they settled into a regular body, professing great austerity of behaviour, a singular probity and uprightness in their dealings, a great frugality at their tables, and a remarkable plainness and simplicity in their dress. The system of the Quakers

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is laid down in fifteen theses, by Robert Barclay, in a sensible, well wrote apology, addressed to Charles II. Their principal doctrines are, That God has given to all men, without exception, supernatural light, which being obeyed can save them; and that this light is Christ, the true light, which lighteth every man that cometh into the world: that the scriptures were indeed given by inspiration, and are preferable to all the other writings in the world; but that they are no more than secondary rules of faith and practice, in subordination to the light or spirit of God, which is the primary rule: that immediate revelation is not ceased, a measure of the spirit being given to every one: that all superstitions and ceremonies in religion of mere human institution, ought to be laid aside: as also, in civil society, the saluting one another by pulling off the hat, bowing, or the like; and the saying *you* instead of *thou*, to a single person: that men and women ought to be plain and grave in their apparel, sober, and just in their whole conversation, and at a word in all their dealings; and not to swear, to go to war, to fight in private quarrels, or even to bear any carnal weapons. They also entirely set aside the two sacraments, baptism and the Lord's supper; admit no clergy among them, but any one, without distinction, who is of a sober life, and believes him or herself to be moved thereto by the spirit, is allowed to preach in their assemblies; and they hold it unlawful to pay tythes, or church rates. In short, they are a quiet inoffensive people, of exemplary morals, remarkably charitable, and friendly to each other, and have never yet been guilty of persecution, though they have had it in their power. Among other excellent regulations among these inoffensive people, they provide so well for their poor, that I believe a Quaker was never seen to ask charity.

As to discipline and polity, the affairs of the community are managed in their assemblies, of which there are several kinds; as monthly, quarterly, yearly, second days meetings, and meetings of sufferings. The monthly and quarterly meetings are held in their respective counties, to which deputies are sent from the several particular meetings, and enquiry is made into the state of each meeting; who violate the laws of the community; who pay tythes or church-rates, and who suffer for the non-payment of

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either: here too they excommunicate, and receive again into their communion; of all which registers are kept. From these meetings appeals lie to their yearly assemblies, which are always held in London, and consist of three orders or classes; representatives sent from the quarterly meetings: correspondents from foreign countries and the several counties, and preachers. Hither are transmitted accounts of what has been transacted in all the monthly and quarterly meetings: here measures are concerted, and directions given as to behaviour about tythes, rates, &c. and here they compose differences, and make provision for the poor: here public accounts are audited, and instructions given to the deputies to be observed at their return; and from hence a yearly epistle of admonition is dispatched to be read in all the monthly and quarterly meetings. The second day's meeting is a standing committee, consisting of the principal preachers in and about the city, who meet every Monday, to consider of particular cases and exigences which happen between the yearly meeting.

The meetings of sufferings is held every week, and consists of the correspondents for each county. Its business is to receive complaints for such as have suffered for non-payment of tythes and church-rates, and to procure them relief, either by sending them money, for which they have a settled fund, or by soliciting their cause, or both.

QUALITY, is defined by Mr. Locke, to be the power in a subject of producing any idea in the mind: thus a snow-ball having the power to produce in us ideas of white, cold, and round, these powers, as they are in the snow-ball, he calls qualities; and as they are sensations, or perceptions, in our understandings, he calls ideas. See *Idea*.

These qualities, according to the same philosopher, are of two sorts; first, original or primary qualities, are those inseparable from body, and such as it keeps in all its changes and situations: these are solidity, extension, motion, or rest, number and figure: thus, take a grain of wheat, divide it into two parts, each has solidity, extension, figure, mobility; divide it again and it still retains the same qualities, and will do so still, though you divide it on till the parts become insensible. Secondly, secondary qualities are such, whatever reality we by mistake may attribute to them, as in truth are nothing

nothing in the objects themselves, but powers to produce various sensations in us, and depend on the qualities before-mentioned; such are colours, smells, tastes, sounds, &c.

The mind can have no other idea of sensible qualities, than what comes from without, by the senses; nor any other idea of the operations of a thinking substance, than what it finds in itself; and as of two primary qualities of body, viz. solid coherent parts, and impulse, we have clear and distinct ideas, so likewise have we of two primary qualities of spirit, viz. thinking and a power of action; and as we have clear and distinct ideas of several qualities inherent in bodies, which are but the various modifications of the extension of cohering solid parts, and their motion; so we have likewise the ideas of the several modes of thinking, viz. believing, doubting, hoping, fearing, &c.

CHEMICAL QUALITIES, those qualities principally introduced by means of chemical experiments, as fumigation, amalgamation, eupellation, volatilization, precipitation, &c.

QUALITY, is also used for a kind of title given to certain persons, in regard of their territories, signories, or other pretensions.

QUANTITY, any thing capable of estimation, or mensuration; or which, being compared with another thing of the same kind, may be said to be greater or less than it, equal or unequal to it. Mathematics is the science or doctrine of quantity, which being made up of parts, is capable of being made greater or less. It is increased by addition, and diminished by subtraction; which are therefore the two primary operations that relate to quantity. Hence it is that any quantity may be supposed to enter into algebraic computations two different ways, which have contrary effects, viz. either as an increment or as a decrement. See *Addition and Subtraction*.

As addition and subtraction are opposite, or an increment is opposite to a decrement; there is an analogous opposition between the affections of quantities that are considered in the mathematical sciences; as between excess and defect, between the value of effects or money due to a man, and money due by him; a line drawn towards the right, and a line drawn towards the left; gravity, and levity; elevation above the horizon, and depression below it. When two quan-

ties equal in respect of magnitude, but of those opposite kinds, are joined together, and conceived to take place in the same subject, they destroy each other's effect, and their amount is nothing. A power is sustained by an equal power, acting on the same body with a contrary direction, and neither have effect. When two unequal quantities of those opposite qualities are joined in the same subject, the greater prevails by their difference; and when a greater quantity is taken from a lesser of the same kind, the remainder becomes of the opposite kind. When two powers or forces are to be added together, their sum acts upon the body; but when we are to subtract one of them from the other, we conceive that which is to be subtracted, to be a power with an opposite direction; and if it be greater than the other, it will prevail by the difference. This change of quality only takes place where the quantity is of such a nature as to admit of such a contrariety or opposition. We know nothing analogous to it in quantity abstractly considered, and cannot subtract a greater quantity of matter from a lesser; or a greater quantity of light from a lesser; and the application of this doctrine to any art or science, is to be derived from the known principles of the science.

A quantity that is to be added, is called a positive quantity; and a quantity to be subtracted, is said to be negative.

Quantities are said to be like or similar, that are of the same denomination, or are represented by the same letter or letters, equally repeated: but quantities of different denominations, or represented by a different letter or letters, are said to be unlike or dissimilar. A quantity consisting of more than one term is called a compound quantity; whereas that consisting of one term only is denominated a simple quantity.

The quantity of matter in any body, is the product of its density into its bulk; or a quantity arising from the joint consideration of its magnitude and density; as, if a body be twice as dense, and take up twice as much space as another, it will be four times as great. This quantity of matter is best discoverable by the absolute weight of bodies. See *Gravity*.

The quantity of motion in any body is the factum of the velocity into the mass, or it is a measure arising from the joint consideration of the quantity of matter, and the velocity of the motion of the body; the motion of any whole being

the sum or aggregate of the motion in all its several parts. Hence, in a body twice as great as another, moved with an equal velocity, the quantity of motion is double; if the velocity be double also, the quantity of motion will be quadruple. Hence, the quantity of motion is the same with what we call the momentum or impetus of a moving body.

QUANTITY, in grammar, an affection of a syllable, whereby its measure, or the time wherein it is pronounced, is ascertained; or that which determines the syllable to be short or long.

The quantity of a syllable is either natural or accidental: natural quantity is that taken from the nature of the vowel, as *re* in *resisto* is short, and *de* in *depello* is long. Accidental quantity is that departing from the natural quantity, merely by accident, as *re* in *resisti* is long, because it is immediately followed by two consonants; and *de* in *deamo* is short, because it immediately precedes a vowel.

The quantity of syllables is known two ways. 1. By rules for that purpose. And 2. By authority. The rules for this end are taught by that part of grammar called prosody; the authority made use of in this case is no more than examples from, or the testimony of, approved authors; and is never used but either when the rules are deficient, or when we are unacquainted with them. The quantity of the syllables is but little fixed in the modern tongues; and there is still less regard had to it in the composition of modern verses. The want of feet, or rather the shortness and uniformity of our feet, makes a world of difference between the numbers of the antient and modern verse. The antients subsisted by their quantities alone; so well were they distinguished, and such a harmony did they produce. Our quantities make such poor music, that we are generally forced to call in the Gothic aid of rhyme, to distinguish our verse from prose.

QUARANTAIN, QUARENTINE, or QUARANTENA, in old law books, denotes the space of forty days. It also signifies a benefit allowed to the widow of a man dying seised of lands, &c. by which she may challenge to continue in his capital messuage, or chief mansion-house, so it be not a castle, for the space of forty days after his decease. And if the heir or any other person eject her, she may have the writ de quarentena habenda.

QUARANTAIN is more particularly used for a term of forty days, which vessels, coming from places suspected of contagion, are obliged to wait in certain places appointed to air themselves, before they come into port. See *Lazar-house*.

QUARREL, in law, is generally applied to personal and mixed actions, in which the plaintiff is called querens: and hence it is that if a person release all quarrels, it is taken to be as beneficial to the releasee, as if it were a release of all actions; since all actions both real and personal are thereby released.

QUARRY, a place under ground, from whence are taken marble, free-stone, slate, lime-stone, or other matters proper for buildings. Quarries of free-stone are in many places opened, and the stone brought out, in the following manner: they first dig a hole in the manner of a well, twelve or fourteen feet in diameter, and the rubbish drawn out with a windlass in large osier baskets, they heap up all around; placing their wheel, which is to draw up their stones, upon it. As the hole advances, and their common ladder becomes too short, they apply a particular ladder for the purpose. When they have got through the earth, and are arrived at the first bank or stratum; they begin to apply their wheel and baskets to discharge the stones as fast as they dig through them. In freeing the stone from the bed, they proceed thus; as common stones, at least the softer kinds, have two grains, a cleaving grain, running parallel with the horizon, and a breaking grain, running perpendicular thereto; they observe by the grain where it will cleave, and there drive in a number of wedges, till they have cleft it from the rest of the rock. This done they proceed to break it; in order to which applying the ruler to it, they strike a line, and by this cut a channel with their stone-ax; and in the channel if the stone be three or four feet long, set five or six wedges, driving them in very carefully with gentle blows, and still keeping them equally forward. Having thus broken the stone in length, which they are able to do of any size within half an inch, they apply a square to the straight side, strike a line, and proceed to break it in breadth. This way of managing stone is found vastly preferable to that where they are broken at random; one load of the former being found to do the business of a load and a half of the latter. But it may be observed, that this cleaving grain being generally

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rally wanting in the harder kinds of stones, to break up these in the quarries, they have great heavy stone-axes, with which they work down a deep channel into the stone; and into this channel, at the top, lay two iron bars, between which they drive their iron wedges. Some in dividing the stone, especially the very hard kinds, make use of gunpowder, with very good effect. In order to which, making a small perforation pretty deep in the body of the rock, so as to have that thickness of rock over it judged proper to be blown up at once, at the further end of the perforation they dispose a convenient quantity of gunpowder, filling up all the rest with stones and rubbish, strongly rammed in, except a small place for the train. By this means is the rock blown into several pieces, most of which are not too big to be managed by the workmen.

QUARRY, or QUARREL, among glaziers, a pane or piece of glass cut in a diamond form. Both words are derived from the French *quarré*, a square.

QUART, a measure containing the fourth part of some other measure. The English quart is the fourth part of a gallon, or two pints.

QUARTAN, Quartana, in medicine, a species of intermitting fever, wherein the patient has two fits in four days, or two days quite free from a fit. It usually begins about four or five in the afternoon, sometimes sooner and sometimes later, with a great lassitude, stretching, a blunt pain in the head, back, loins, and legs; the feet and hands are cold, and the whole body is pale; and the face and nails livid, to which shivering and shaking supervene. The tongue and the lips tremble; the breathing is difficult, with restlessness, and tossing; the pulse is contracted and hard, and sometimes unequal; and there is an anxiety about the præcordia. These symptoms continue about two or three hours; and in some the body is collicive, whereas in others there is a stimulus to stool, and to make water; in some again, there is a nausea or vomiting, with stools; and some advanced in years, have their minds pretty much disturbed. The heat comes on gradually, not burning but dry; the pulse becomes equal, quick, and large, but the dull pain in the head remains, with a vertiginous affection: the skin becomes only a little moist; and in about four or six hours, the symptoms vanish except a dull pain in the bones, joints, and feet. The

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urine in the fit is sometimes thin and watery, and sometimes thick with a sediment. From the experiments of Dr. Langrish it appears, that the blood is more dense and tenacious in quotidians than in tertians, and in tertians than in quartans. See *Quotidian* and *Tertian*.

As to the cure, a vomit should be given after the first fit, in the time of intermission: in tender constitutions, ipecacuanha may be given alone, or two ounces of vinum ipecacuanhum: but to the more robust, a grain or two of emetic tartar may be added, to be taken in warm water about two hours after the paroxysm. The evacuation should be facilitated by taking large draughts of water-gruel made fat with fresh butter. Then take the following electuary, which will crush the disease in the bud: viz. take of rob of elder, one ounce; of Peruvian bark, five drams; of the powder of common chamomile-flowers, two drams; of the extract of lesser centaury and powder of clove-julyflowers, each half a dram; and as much syrup of lemons as is sufficient to reduce them to the form of an electuary. The dose is half a dram, to be taken every two hours after the fit.

If any thing forbids vomiting, the cure must be begun with detergent and aperient salts, as vitriolated tartar, sal ammoniac, purified nitre, and crab's eyes; and if the ague still continue notwithstanding the repeated use of these salts, then an equal weight of Peruvian bark must be added to them, or the above electuary may be given.

When the patient is subject to the hypochondriac passion, the stomach is inflated, and the body collicive; then neither vomits nor salts must be ventured upon, but carminative and emollient clysters.

In obstinate quartans, Hoffman greatly commends the following medicine: take of Peruvian bark, three drams; of medicinal regulus of antimony, two drams; of mercurius dulcis, which is not to be triturated with the powder, on account of the salts, but only mixed with the point of a knife, of the finest crocus martis, and of vitriolated nitre, each one dram; and of oil of mint, four drops: make up all these into a powder, of which half a dram, or a dram, may be taken; made into the form of a bolus with rob of elder, and syrup of clove july-flowers.

This method is confirmed by Huxham, who says the bark frequently proves ineffectual, without the help of proper alexipharmics; as snake-root of Virginia,

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contrayerva, myrrh, camphor, &c. After four or five paroxysms, warm chalybeates may be added with very great success; but when the patient's complexion has a yellow cast, and he has a tense abdomen, and very costive habit of body, mercurial, saponaceous deobstruents with rhubarb, aloetics, or sal diureticus should be premised to, or joined with the bark. Hoffman observes, that obstinate quartans in boys are not to be cured but by purging: and therefore, he directs the following form; take of cream of tartar, one dram; of calx of antimony, twelve grains; of sulphurated diargyrium, six grains; make them into a powder, which may be taken in three doses, the first six hours before the fit, the second before the next fit, and the third before the third fit. After this, he orders an infusion of half an ounce of Peruvian bark in eight ounces of fennel-water; adding the bark of cleutherius, sal diureticus, and salt of tartar, of each one dram, together with half an ounce of syrup of clove july-flow-ers, a spoonful of which should be taken every two hours.

To prevent the return of an ague, the bark must be repeated every week or ten days, for three several times, with the same intervals. Likewise bitters and chalybeates are very serviceable, taken either together or separately.

QUARTATION, in metallurgy, a method of purifying gold, by melting three parts of silver with one of gold, and then throwing the mixture into aqua fortis.

Experience has taught us, says Cramer, that aqua-fortis dissolves silver mixed with gold quickly enough, when the gold constitutes but one, and the silver three parts of a mixed mass of them: and in this case, if the solution is not too impetuously performed, the gold usually remains in such a proportion, in the same figure that the whole mass had before the separation of the silver by this menstruum; so that in this case, there is no reason to apprehend the gold's being torn into minute particles, and dissipated in some measure, though this can hardly be prevented when the silver exceeds the three quarter proportion, in regard to the gold in the mass. The artificers therefore, always make it their study to observe very exactly this proportion of the gold being one fourth part of the mixture; and thence it is that the operation itself has been called quartation.

From this operation we may learn how fallacious the examination made with aqua-fortis alone of the gold rubbed

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on the touchstone, must necessarily prove.

QUARTER, the fourth part of any thing, the fractional expression for which is $\frac{1}{4}$.

QUARTER, in weights, is generally used for the fourth part of an hundred weight averdupois, or 28 $\frac{1}{2}$ lb.

Used as the name of a dry measure, quarter is the fourth part of a ton in weight, or eight bushels.

QUARTER, in law, the fourth part of a year; and hence the days on which these quarters commence, are, March 25, called Lady-day; June 24, or Midsummer-day; September 29, or Michaelmas; and December 21, or St. Thomas the Apostle's day. On these days rents on leases, &c. are usually reserved to be paid; though December 25, or Christmas-day, is usually reckoned the last quarter-day.

QUARTER, in astronomy, the fourth part of the moon's period: thus from the new moon to the quadrature is the first quarter: from this to full moon, the second quarter, &c.

QUARTER, in heraldry, is applied to the parts or members of the first division of a coat that is quartered, or divided into four quarters.

Franc-Quarter, in heraldry, a quarter single or alone; which is to possess one fourth part of the field. This makes one of the honourable ordinaries of a coat.

QUARTER of a Point, in navigation, the fourth part of the distance between two cardinal points, which is $2^{\circ} 48'$.

QUARTER, the hinder part of a ship's side, or that part of the side which is nearest the stern, commencing nearly from the mizen chains, and terminated by the fashion-pieces on the edge of the stern.

QUARTER also implies the middle of a yard-arm, or that part of a yard-arm on each side, which is about half-way from the mast to either of the ends or extremes of the yards.

QUARTER-CLOTH, a long piece of canvas painted with trophies, and other ornamental figures of war, and extended along the upper side of a ship's quarter.

QUARTER-DECK, the deck that reaches over all the hind parts of a ship, where the principal officers walk, as on a parade. Above the after-part of this deck is placed the poop, which commonly forms the captain's cabin in a large ship of war, when the one below it, his usual habitation, is occupied by an admiral or commodore.

QUARTER-GALLERY, a sort of railed

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railed balcony projecting over a ship's quarter, close to the stern.

QUARTER-GUNNERS, certain officers under the command of the gunner of a ship of war, to keep the artillery, ammunition, &c. in good order.

QUARTER-MASTER, an officer who walks the quarter-deck of a ship of war to watch the man at the helm, and observe that the ship is properly steered, to keep the time regularly by watch-glasses, to remark what boats come on board, and to assist at stowing and unstowing the hold.

QUARTER-NETTING, a sort of net-work extending from the quarter-rail to the gunnel, which is drawn extremely tight.

QUARTER-RAIL, a rail extended along the quarters on each side, immediately above the gunnel, or upper-part of the side.

QUARTER-TACKLE, a tackle, or complication of pulleys hung from the quarter of the yard, to hoist any thing into or out of the ship.

QUARTERING WIND, one that blows on the quarter, which is the fairest direction possible.

QUARTERS, the stations of the officers and men of a vessel of war, in the time of engagement; and hence the posting them to their several stations is called quartering the crew.

QUARTER, in the military art, is used in various senses, as for the place allotted to a body of troops to encamp upon: thus they say, The general has extended his quarters a great way, &c. Quarter also signifies the sparing mens lives: thus it is said, The enemy asked quarter; The enemy gave us quarter.

Head QUARTERS, the place where the general of an army has his quarters, which is generally near the center of the army.

QUARTERS of Refreshment, the place to which the troops that have been much fatigued are sent to refresh themselves during a part of the campaign.

Winter QUARTERS, the place in which the troops are lodged during the winter, or their residence in those places.

QUARTER-MASTER, an officer in the army, whose business is to look after the quarters of the soldiers; of which there are several kinds, viz. the quarter-master-general, whose business is to provide good quarters for the whole army. Quarter-master of horse, he who is to provide quarters for a troop of horse.

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Quarter-master of foot, he who is to provide quarters for a regiment of foot.

QUARTER-CHORD, in mining, is seven yards and a quarter, which the miner has cross-wise of his vein, on either side, for liberty to lay his earth, stones, and rubbish on, and to wash and dress up his ore.

QUARTERS, in building, those slight upright pieces of timber placed between the puncheons and posts, used to lath upon. These are of two sorts, single and double; the single quarters are sawn to two inches thick and four inches broad; the double quarters are sawn to four inches square. It is a rule in carpentry, that no quarters be placed at a greater distance than fourteen inches.

QUARTER-ROUND, in architecture, a term used by the workmen for any projecting moulding in general whose contour is a perfect quadrant of a circle, or which approaches near that figure.

QUARTER-SESSIONS, a general court held quarterly by the justices of peace of each county.

QUARTER-WHEELING, or **QUARTER of Conversion**, in the military art, is the motion by which the front of a body of men is turned round to where the flank was, by taking a quarter of a circle. If it be done to the right, the man in the right hand angle keeps his ground and faces about, while the rest wheel: if to the left, the left-hand man keeps his place.

QUARTERING, in gunnery, is when a piece of ordnance is so traversed that it will shoot on the same line, or on the same point of the compass as the ship's quarter bears.

QUARTERING, in heraldry, is dividing a coat into four or more quarters, or quarterings, by parting, coupling, &c. that is, by perpendicular and horizontal lines, &c.

Counter QUARTERING a Coat, is when the quarters are subdivided each into four. There are counter-quartered coats that have twenty or twenty-five quarters.

QUARTERLY, in heraldry. A person is said to bear quarterly, when he bears arms quartered.

QUARTERN, a diminutive of quart, signifying a quarter of a pint.

QUARTO, or 4to, a book of which four leaves, or eight pages make a sheet.

QUASHING, in law, the overthrowing and annulling of any thing.

QUAVER, in music, a measure of time equal to half a crotchet, or an eighth of a semibreve. The quaver is divided into

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into two semi-quavers, and four demi-semi-quavers.

QUAVERING, in music, trilling or shaking; or the running a division with the voice.

QUAY, or **KAY**. See *Wearf*.

* **QUEBEC**, a handsome large town of America, and capital of all Canada. The first place taken notice of upon landing here is a square of an irregular form, with well-built houses on one side; on the back of which is a rock: on the left it is bounded by a small church, and on the right are two rows of houses, parallel to each other. There is another between the church and the harbour; as also another long row on the side of the bay. This may be considered as a kind of suburb; and between this and the great street there is a very steep ascent, in which they have made steps for the foot-passengers to ascend. This may be called the Upper Town, where is the bishop's palace, and between two large squares is a fort where the governor lodges. The Recollets have handsome houses over-against it, and on the right is the cathedral church; over against this is the Jesuit's college, and between them are well-built houses; from the fort run two streets, which are crossed by a third, and between these is a church and convent. In the second square are two descents to the river St. Charles. The Hotel-dieu is in the mid-way, and from thence are small houses, which reach to the house of the intendant. On the other side of the Jesuit's college, where the church stands, is a long street, in which is a nunnery. The houses are in general built of stone, and there are about 7000 inhabitants. Quebec is not regularly fortified, but cannot easily be taken, for the harbour is flanked with two bastions, which at high tides are almost level with the water. A little above one of the bastions is a demi-bastion, partly taken out of the rock; and above it, on the side of the gallery of the fort, is a battery of 25 pieces of cannon. To the left of the harbour, on the side of the road, there are large batteries of cannon, and some mortars: besides these, there are several other fortifications, not very easy to be described. In 1711 the English fitted out a fleet with a design to conquer Canada, which failed on account of the rashness of the admiral, who, contrary to the advice of his pilot, went too near the Seven Isles, and so lost his largest ships, and 3000 of his best soldiers. On October 16, 1759, it was taken by the English;

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under the command of general James Wolfe, who after having surmounted every obstacle of art and nature, expired in the arms of victory. Admiral Saunders commanded the fleet, whose courage and conduct as an officer need no encomiums. It is to be observed, there was the strictest harmony preserved between the army and navy, which greatly contributed to the reduction of the place. After this valuable acquisition, all Canada came under the jurisdiction of the crown of Great Britain, and was given up by the French at the treaty of peace 1763. An act of parliament passed the two houses in England in 1774, permitting the Canadians the free use of their religion [popery] and allowing them their own mode of trial. Wretched must be the situation of his majesty's Protestant subjects in Canada! Long. 69 deg. 48 min. W. Lat. 46 deg. 55 min. N.

* **QUEBEC taken**. The consequences which attended the reduction of the fort of Niagara, as well as those upon Lake Champlain, were very interesting; but the great and central operation, to which all the rest tended, and to which even those were to be only subservient, was that against Quebec, the capital of Canada: and as this was to be the decisive stroke, it was proper that the greatest force should have been employed against it. If we reckon the maritime force, there is no doubt that we employed a greater number of men against Quebec than against the Champlain forts; but the land-forces, from some cause, fell much short of the number originally proposed, for they did not exceed seven thousand men, regulars and provincials, though the original plan intended nine thousand for that expedition, independent of the junction of those under general Amherst, whose assistance upon the occasion was taken for granted. In this expedition general Wolfe commanded the land-forces. The fleet was under admiral Saunders. The whole embarkation arrived in the latter end of June 1759, at the isle of Orleans, a few leagues from Quebec, without any accident whatsoever, notwithstanding the ill fame of the river St. Lawrence, and the reports of its dangerous navigation, probably spread for political purposes. They landed upon the isle of Orleans, which is formed by the branches of the river St. Lawrence. This island is about 10 miles in length, and 7 or 8 in breadth, highly cultivated, and affording every kind of refreshment to the soldiers and sailors after their tedious voyage. As
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this island extends quite up to the basin of Quebec, it was necessary to possess it in order to act against the town; for the most westerly point of this island advances towards a high point of land on the continent, called Point Levi. Both of these shut up the view of the northern and southern channel, which environ the isle of Orleans, so that the harbour of Quebec appears to be a basin land-locked upon all sides. The possession of both these points were necessary, as they might be employed either with great advantage against the town; or much to the annoyance of the besiegers; for whilst the enemy continued masters of those, it was impossible for a ship to lie in the harbour of Quebec. When these posts were possessed, which was done with little difficulty, the harbour and town of Quebec appeared full to the view, at once a tempting and discouraging sight: for no place seems possessed of greater benefits of nature, nor none of which nature seems more to have consulted the defence. Quebec, says F. Charlevoix, can boast of a fresh-water harbour, capable of containing a hundred men of war of the line, at one hundred and twenty leagues distance from the sea. It lies on the most navigable river in the universe. The river St. Lawrence, up to the isle of Orleans, that is, for about a hundred and twelve leagues from its mouth, is no where less than from four to five leagues broad; but above that isle it narrows, so that before Quebec it is not above a mile over. Hence this place got the name of Quebec, or Quebec, which in the Algonquin tongue signifies a strait. The city is the seat of the governor, and the intendant, and the supreme tribunals of justice for all the French North America: it is also an episcopal see, and a place of considerable trade. It is large in extent, and elegant in many of its buildings, both public and private. It consists of an upper and lower town; the lower, which is narrow, is built upon a strand, at the foot of a lofty rock, upon which the upper town stands. This rock extends itself, and continues with a bold and steep front westward along the river St. Lawrence for a considerable way. Another river from the north-west, called St. Charles, falls here into the former, washing the foot of the rock on which Quebec stands. The point on which the town is built thus becomes a sort of peninsula by the junction of these rivers. So that whoever attacks Quebec must either make his approaches above the town,

and overcome the precipice which we have mentioned, or cross the river St. Charles, and attempt it upon that side. The former of those methods must appear to a prudent commander wholly unadvisable, and the latter extremely difficult. If the former method should be attempted, they would have that dangerous precipice to overcome, defended by the enemy's whole force, which the attack would draw to this quarter. On the other hand, the country, from the river St. Charles to the northward, for more than five miles, is extremely rough, broken, and difficult, full of rivulets, gullies, and ravines, and so continues to the river of Montmorenci, which flows by the foot of a steep and woody hill. On the side of the river St. Lawrence is a bank of sand of great extent, which prohibits the approach of any considerable vessel. In this advantageous situation was the French army posted, upon what was deemed the only accessible side of Quebec, all along from the river St. Charles to that of Montmorenci, intrenched at every attackable spot, with the river and sand-bank above mentioned in their front, and thick impenetrable woods upon their rear. It is impossible to imagine a stronger post, a post at once more defensible in itself, or better calculated for succouring the city, on which side soever it should be attacked. Thus posted, they greatly exceeded in numbers the besiegers, being about ten thousand men, under an able, and hitherto fortunate commander, M. de Montcalm, who, though he was superior in number to the English, resolved to risk nothing, and wisely relied on the natural strength of the country. When Wolfe saw the situation of the town, the nature of the country, the number of the troops, and their position, though of a sanguine temper, and highly adventurous, he began to despair; but however another commander might have thought inaction in such circumstances justified to himself, or even to the world, by such strong appearances, Wolfe resolved to leave nothing unattempted, but amidst the choice of difficulties which lay before him, to pitch upon those where the valour of his troops might be employed with the best prospect of success. As soon as he had secured the west point of the isle of Orleans, and that of Levi, he erected batteries there of cannon and mortars on the high ground, from the Point of Levi, which looks towards the town: these fired continually upon the place. Admiral Saunders was stationed

stationed below in the north channel of the isle of Orleans, opposite to Montmorenci; admiral Holmes was stationed above the town, at once to distract the enemy's attention, and to prevent any attempts from the enemy against the batteries that played upon the town. After this wise disposition was made of the fleet, general Wolfe caused the troops to be transported over the north channel of the river St. Lawrence, to the north-east of Montmorenci, with a view of passing that river, and bringing the enemy to an engagement. Some heights which commanded the enemy's intrenchments, and a ford above, and another below the falls, encouraged him to this attempt; but upon reconnoitering the ground, the opposite shore was found so steep and woody, that he could not hope to put his design in execution, which was, by moving towards the enemy's flank, to draw them to an engagement. To bring the French to an action was his single object. He had found that any attempts to assault the city would prove to no purpose whilst the fleet could only batter the lower town, and must suffer greatly by the cannon and bombs of the upper, whilst they were employed in this ineffectual service; for after the reduction of the lower town, the passages to the upper were extremely steep, and moreover so well intrenched that this advantage would prove little towards the reduction of the place. The only point left, therefore, was by every means to entice or force the enemy to an engagement; and to this end no means were omitted, by sending detachments up the river, and by every appearance of a design to attack the town on that side. But the marquis de Montcalm, in choosing his post, was well apprized of its importance. He knew sufficiently the nature of the country up the river, and he trusted to it; and therefore he kept himself closely in his post, disposing his parties of savages, in which he was very strong, in such a manner as to make any attempt upon him by surprize absolutely impossible. In the mean time, from the town fireships and boats were let down the stream to destroy the shipping, which, as they almost wholly filled the channel, were greatly endangered; but by the extraordinary skill and vigilance of admiral Saunders, every vessel of this kind sent against them was towed ashore without doing the least mischief. The general finding that all his efforts to decoy the

enemy to an engagement had proved unsuccessful, and sensible that they desired nothing more than to act defensively, until the season itself should fight for them, and oblige the English to retire, he came at last, in spite of all difficulties, to the resolution of attacking them in their intrenchments on the side of Montmorenci. The place where the attack was to be made was chosen with great judgment, as the only place thereabouts in which the artillery might be brought into use, as there, and there only, the greatest part, or even the whole troops, might act at once; and that there the retreat, in case of a repulse, was secure, at least for a certain time of the tide. Having determined upon the place where the attack was to be, which was at the mouth of the river Montmorenci, the best dispositions for it were made, both on the part of the admiral and of the general, July 30th. But notwithstanding that the whole was conducted with equal vigour and prudence, it was totally defeated by one of those accidents which so frequently interpose, to the disgrace of human wisdom, and which demonstrates that she is far from being the sole arbitress of war. The English grenadiers, who led the attack, had orders, immediately after their landing, to form themselves on the beach; but instead of forming themselves as they were directed, from the hurry and noise of their landing, or from an ill-governed ardor, they rushed impetuously towards the enemy's intrenchments, in the utmost disorder and confusion, without waiting for the corps which were to sustain them, and join in the attack. In this disorder they were met by a violent and steady fire from the intrenchments, by which they were thrown into more confusion, and obliged to shelter themselves behind a redoubt, which the French had abandoned on their approach. The general perceiving that it was impossible for these grenadiers to form under so severe a fire, that the night drew on, a violent tempest was gathering, and the tide began to make, saw clearly that he had nothing further left than to order a retreat with as little disadvantage as possible. He therefore called off these troops, and having formed them behind brigadier Monkton's corps, which was on the beach in excellent order, the whole repassed the river without molestation; the general exposing his person with that intrepidity which distinguished him both during the

the attack and the retreat. The loss in this check was not inconsiderable, and the event on the whole was such as to discourage any further attempts upon that side. They returned to the old measures. The general again sent some bodies above the town, and some men of war sailed up the stream for more than twelve leagues. They received intelligence that the enemy had amassed some magazines of provisions in the interior country, and they proposed, by getting between them and the town, to draw the French army from their intrenchments to the long-desired engagement; but if they failed to compass this, they might at least destroy the ships of war which the enemy had in the river, and help to open a communication between them and general Amherst, on whom their last expectations were fixed, and who, they flattered themselves, was on his march to their assistance. But though they succeeded in destroying some of the enemies' magazines, there was nothing of great moment in this: they could not come near the men of war: however, they received intelligence from some prisoners of the success of Sir William Johnson against Niagara: they learned likewise, that the French had smoothed the difficulties in the way of general Amherst, by abandoning Crown-Point and Ticonderoga. But this intelligence, otherwise so pleasing, brought them no prospect of the approach of any assistance from that quarter. The season wasted apace; the general fell violently ill, consumed by care, watching, and a fatigue too great to be supported by a delicate constitution, and a body unequal to that vigorous and enterprising soul that it lodged. It was not enough for him to escape from so great an expedition uncondemned and unapplauded: to be pitied was, he thought, but a milder censure; and he knew that no military conduct can shine, unless it be gilded with success. His own high notions, the public hope, the good success of other commanders, all turned inward upon him, oppressed his spirits, and converted disappointment into disease. As soon as he had a little recovered, he dispatched an express with an account of his proceedings to England, written indeed in the style of despondency, but with such perspicuity, clearness, and elegance, as would have ranked him among our best writers, if his military exploits had not placed him among our greatest commanders. He resolved,

when he sent away his account, to continue the campaign to the last possible moment; after a deliberation with his officers, determined, that any further attempts at Montmorenci were to little purpose, and that their principal operations should be above the town, in order, if possible, to draw the enemy to an action. But the design of Wolfe was deeper, and more particularly directed than it had been before. The camp at Montmorenci was broke up, and the troops were conveyed to the south-east of the river, and encamped at Point Levi. The Squadron under admiral Holmes made movements up the river for several days successively, in order to draw the enemies attention as far from the town as possible. This succeeded in some measure; for though it could not persuade the marquis de Montcalm to quit his post, it induced him to detach M. de Bougainville with fifteen hundred men to watch their motions, and to proceed along the western shore of the river, whilst the English army directed its march the same way on the eastern bank. When general Wolfe saw that matters were ripe for action, he ordered the ships under admiral Saunders, to make a feint, as if they proposed to attack the French in their intrenchments, on the Beauport shore below the town, and by their motions, to give this feint all the appearance of a reality which it possibly could have. This disposition being made below the town, the general embarked his forces about one in the morning, and with admiral Holmes's division, went three leagues further up the river than the intended place of his landing, in order to amuse the enemy, and conceal his real design. Then he put them into boats, and fell down silently with the tide unobserved by the French centinels posted along the shore. The rapidity of the current carried these boats a little below the intended place of attack. The ships followed them, and arrived just at the time which had been concerted to cover their landing. Considering the darkness of the night, and the rapidity of the current, this was a very critical operation, and it required excellent heads, both on the part of the marine, and the land service, to preserve a communication, and to prevent a discovery and confusion. As the troops could not land at the spot proposed, when they were put on shore, an hill appeared before them extremely high and steep in its ascent; a

little path winded up this ascent, so narrow that two could not go abreast. Even this path was intrenched, and a captain's guard defended it. These difficulties did not abate the hopes of the general, or the ardor of the troops. The light infantry under colonel Howe laying hold of stumps and boughs of trees, pulled themselves up, dislodged the guards, and cleared the path; and then all the troops surmounting every difficulty, gained the top of the hill, and as fast as they ascended, formed themselves, so that they were all in order of battle at day-break. Montcalm, when he heard that the English had ascended the hill, September thirteenth, and were formed on the high ground at the back of the town, scarcely credited the intelligence, and still believed it to be a feint to induce him to abandon that strong post, which had been the object of all the real attempts that had been made since the beginning of the campaign. But he was soon, and fatally for him, undeceived. He saw clearly that the English fleet and army were in such a situation, that the upper and lower town might be attacked in concert, and that nothing but a battle could possibly save it. Accordingly he determined to give them battle, and quitting Beauport, passed the river St. Charles, and formed his troops opposite to ours. He filled the bushes that were in his front with detachments of Indians, and his best marksmen, to the number of about fifteen hundred; his regular forces formed his left; his right was composed of the troops of the colony, supported by two battalions of regulars. The rest of the Indians and Canadians extended on that side, and attempted to outflank the left of the English, which was formed to prevent that design, in a manner which the military men call *potence*; that is, in a body which presents two faces to the enemy. Here brigadier general Townshend commanded six regiments, and the Louisbourg grenadiers were disposed in a line to the right of this body, extending to the river. A regiment was drawn up behind the right for a reserve. It was formed in eight subdivisions with large intervals. The light infantry under colonel Howe, protected the rear, and the left. The dispositions on both sides were judicious, and the engagement on both sides began with spirit. The English troops were exhorted to reserve their fire; and they bore that of the enemy's light troops in front,

which was galling, though irregular, with the utmost patience and good order, waiting for the main body of the enemy, which advanced fast upon them. At forty yards distance, our troops gave their fire, which took place in its full extent, and made a terrible havoc among the French. It was supported with as much vivacity as it was begun, and the enemy every where yielded to it; but just in the moment, when the fortune of the field began to declare itself, general Wolfe, in whose life every thing seemed included, fell; general Monkton, the next to him in command, fell immediately after, and both were conveyed out of the line; the command now devolved on general Townshend. It was at a very critical time. For, though the enemy began to fall back, and were much broken, the loss of the two generals was a very discouraging circumstance, and it required great temper and great exertions to support the advantages that had been gained, and to push them to their proper extent. General Townshend shewed himself equal to so arduous a duty; the troops preserved their spirit, and each corps seemed to exert itself with a view to its peculiar character. The grenadiers with their bayonets, the Highlanders with their broad swords, and the rest of the forces, with a steady and continued fire, drove the enemy in great disorder from every post, and completed their defeat. During the whole action, colonel Howe, with his light infantry, covered the left wing in such a manner, as entirely to frustrate the attempts of the enemy's Indians and Canadians upon that flank. The field now seemed to be completely decided, when a new enemy appeared, which threatened to bring on a fresh engagement, and to put all again to the hazard. M. de Bougainville, whom the feigned movements of the English troops had drawn up the river, turned back on discovering their real design, and now appeared on the rear of the army, with a body of two thousand men. But fortunately the main body of the French was by this time so broken and dispersed, that the general was able to establish his rear, and to turn such an opposition on that side, that the enemy retired after a very feeble attempt. In this decisive action, our troops lost about five hundred men; on the side of the enemy, at least fifteen hundred were killed. But however glorious this victory was, and however important in its consequences, it must

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must be admitted that it was very dearly bought. Soldiers may be raised; officers will be formed by experience; but the loss of a genius in war, is a loss which we know not how to repair. The death of Wolfe was indeed grievous to his country, but to himself the most happy that can be imagined; and the most to be envied by all those who have a true relish for military glory. Undebted to family, or connections; unsupported by intrigue or faction; he had accomplished the whole business of life at a time when others are only beginning to appear; and at the age of thirty-five, without feeling the weakness of age, or the vicissitude of fortune, having satisfied his honest ambition, having compleated his character, having fulfilled the expectations of his country, he fell at the head of his conquering troops, and expired in the arms of victory. The circumstances that attended the death of such a person, are too interesting to be passed over in silence, and they were, indeed, such as spoke the whole tenor of his life. He first received a wound in the head; but, that he might not discourage his troops, he wrapped it up in his handkerchief, and encouraged his men to advance; soon after he received another ball in his belly; this also he dissembled, and exerted himself as before; when he received a third in his breast, under which he at last sunk, and suffered himself, unwillingly, to be carried behind the ranks. As he lay struggling with the anguish and weakness of three grievous wounds, he seemed only solicitous about the fortune of the battle. He begged one, who attended, to support him to view the field; but as he found that the approach of death had dimmed and confused his sight, he desired an officer, who was by him, to give him an account of what he saw. The officer answered, that the enemy seemed broken; he repeated his question a few minutes after, with much anxiety; when he was told that the enemy was totally routed, and that they fled in all parts. "THEN, said he, I AM SATISFIED;" and immediately he expired.

QUEEN, Regina, denotes either a woman who holds the crown of a realm singly and by right of blood, called queen regnant; or it is a title, by way of courtesy, given to the wife of the king, who is called queen consort; or the widow of a king is called queen, but with the addition of dowager. In the first sense,

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queen is the same with king, and has the same power and prerogative.

QUEEN-BEE, a name given by modern writers to what used to be called the king-bee, or king of the bees; a large and long-bodied be, of which kind there is only one found in every swarm, and which is always treated with the greatest respect by the rest. See *Bee*.

QUESTION, QUESTIO, in logic, &c. a proposition whose truth a person being inquisitive about, proposes it by way of interrogation to another.

QUEST, or INQUEST, an inquisition made upon oath of an impannelled jury.

QUEST-MEN, or INQUEST MEN, persons chosen yearly in each ward in London, &c. to enquire into abuses, especially such as relate to weights and measures.

QUESTOR, Quæstor, an officer in ancient Rome who had the care of the public treasure. The questor's office, questorship, was originally confined to the army. They paid the soldiery, took charge of monies accruing by spoil, plunder, &c. At length new ones were erected to reside in the city, and receive the public money, &c. There were also another kind of questors whose office was to enquire into, and take cognizance of, capital crimes.

QUEUE, in heraldry, denotes the tail of the beast. If a lion have a forked tail, he is blazoned double queued.

QUICKSILVER, a very pondorous fluid mineral, the same as mercury. See *Mercury*.

QUICK, or QUICKSET-HEDGE, among gardeners, denotes all live hedges, of whatever sort of plants they are composed, to distinguish them from dead hedges; but, in a more strict sense of this word, it is applied to the hawthorn, or *mespilus sylvestris*: under which name the young plants, or sets, are commonly sold by the nursery gardeners, who raise them for sale. In the choice of these sets, those which are raised in the nursery are to be preferred to such as are drawn out of the woods: because the latter have seldom good roots; though, as they are larger plants than are commonly to be had in the nursery, many people prefer them on that account: but from long experience I have found, that those hedges which have been planted with young plants from the nursery, have always made the best hedges. Indeed, if persons would have patience to wait for these

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from seed, and to sow the haws in the place where the hedge is designed, these unremoved plants will make a much stronger and more durable fence, than those which are transplanted; but I am aware that most people will be for condemning this practice, as being tedious in raising; but, if the haws are buried one year in the ground, to prepare them for vegetation, before they are sown, it will not be so long before this will become a good fence, as is generally imagined. Nay, from some trials of this kind, which I have made, I have found, that those plants which have remained where they came up from seed, have made such progress as to overtake, in six years, plants of two years growth, which were transplanted at the time when these seeds were sown. And, if the hedges are raised from seed, it will not be amiss to mix holly berries with the haws, and, if so, these berries should also be buried one year, to prepare them, so that then both will come up together the following spring; and this mixture of holly with the quick will not only have a beautiful appearance in the winter, but will also thicken the hedge at the bottom, and make it a better fence. But, where the hedge is to be planted, the sets should not be more than three years old from the haws; for, when they are older, their roots will be hard and woody; and, as these are commonly trimmed off before the sets are planted, so they very often miscarry; and such of them as do live, will not make so good progress as younger plants, nor are they so durable; for these plants will not bear transplanting so well as many others, especially when they have stood long in the seed-bed unremoved. *Miller's Gard. Dict.*

QUIDDITY, in the schools, the essence or nature of a thing known or expressed in any definition. And hence, whatever is essential to a thing, is said to be quiddative.

QUIESCENT denotes any thing at rest, in contradistinction to motion.

QUIETISM, the sentiments of the Quietists, a religious sect which made a great noise towards the close of the last century.

QUILLS, the large feathers taken out of the end of the wing of a goose, crow, &c. Quills are denominated from the order in which they are fixed in the wing, the second and third quills being the best for writing, as they have the largest and roundest barrels. Crow-quills are chiefly

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used for drawing. In order to harden a quill that is soft, thrust the barrel into hot ashes, stirring it till it is soft, then taking it out, press it almost flat upon your knee with the back of a pen knife, and afterwards reduce it to a roundness with your fingers. If you have a number to harden, set water and alum over the fire, and while it is boiling put in a handful of quills, the barrels only, for a minute, and then lay them by.

QUILT, a covering for a bed, formed of two pieces of silk, cotton, &c. quilted together.

QUILTING, a method of sewing two pieces of silk, linen, or stuff on each other, with wool or cotton between them; by working them all over in the form of chequer or diamond-work, or in flowers. The same name is also given to the stuff so worked.

QUILTING, among sailors, the act of weaving a sort of coat or matting round a jar or jug to prevent it from breaking.

* **QUIN**, James, a celebrated English comedian, was born in the parish of St. Paul's Covent-Garden, London, and his father soon after settling in Ireland, he was first placed in a grammar-school, and afterwards at the university of Dublin, where he remained till he was near 20 years of age. His father intending him for the bar, he then came over to England, and took chambers in the Temple; but he presently found he had a much stronger inclination to study Shakespeare, than Coke upon Littleton. About this time his father died, who having been possessed of a small estate, which his natural generosity had greatly incumbered, Mr. Quin found his patrimony so small, as to be insufficient for his support; and having made but a small progress in the study of the law, he resolved to quit his present pursuit, and apply to the stage. He had many requisites to form a good actor; an expressive countenance, a marking eye, a clear, full and melodious voice, an extensive memory, founded upon a long application to our best and classic authors, an enthusiastic admiration of Shakespeare, a happy and articulate pronunciation, and a majestic figure. He made his first appearance in 1718, at the Theatre Royal in Drury-Lane, but had not an opportunity of displaying his great theatrical powers till the year 1720, when the Merry Wives of Windsor being revived at Lincoln's-Inn-Fields theatre, he performed the part of Falstaff; and the

the first night of his appearance in that character, surprised and astonished the whole audience. Notwithstanding the rough fantastic manner, which so much characterised Mr. Quin, no one was of a more humane disposition, or less addicted to revenge. But there was at that time upon Drury-Lane theatre, one Williams, an inferior player, who performing the part of the messenger in the tragedy of Cato, in saying, "Cæsar sends health to Cato," pronounced the last word Keeto, which so struck Quin, that he replied with his usual coolness, "Would he had sent a better messenger!" Mr. Williams was so exasperated with his answer, that he vowed revenge; and following Quin into the green-room, represented the injury he had done him, by making him appear ridiculous in the eyes of the audience, and insisted upon satisfaction. Quin endeavoured to rally his passion, which only added fuel to his antagonist's rage, who retiring, waited for Quin under the Piazza, upon his return from the tavern to his lodging; Williams drew upon him, and a rencounter ensued, in which Williams fell. For this affair Quin was tried at the Old Bailey, and acquitted. Upon Booth's quitting the stage, Quin shone forth in all his splendour; and yet had the diffidence, upon the first night of his appearing in Cato, to insert in the bills, that the part of Cato would be attempted by Mr. Quin. The modesty of this invitation produced a full house, and a favourable audience; but when he came to that part of the play, where his dead son is brought upon his bier, Quin in speaking these words, "Thanks be to the gods!—my boy has done his duty!" so affected the whole house, that they cried out with continued application, "Booth outdone," and, when he came to the soliloquy, he was encored to a great degree, and the audience with great impropriety insisted on a repetition. Quin was now arrived at the summit of his profession, where he remained without a rival at least ten years. At the end of 1748, Quin having taken umbrage at Rich's behaviour, retired to Bath, but came from thence in the year 1749, to play the part of Othello, for the benefit of the unhappy sufferers by the fire in Cornhill, and afterwards continued many successive years to come constantly to London, to perform the character of Sir John Falstaff, for his old friend Ryan; but 1754, having lost two of his front teeth, he declined

the task, by writing to his friend, that there was no person on earth he would sooner serve, but that he would whistle Falstaff for no man. While Mr. Quin continued upon the stage, he constantly kept company with the greatest geniuses of the age. He was well known to Pope and Swift; and the earl of Chesterfield frequently invited him to his table; but there was none for whom he entertained a higher esteem, than for the ingenious Mr. Thompson, to whom he made himself known by an act of generosity, that does the greatest honour to his character. Mr. Quin's judgment in the English language recommended him to his royal highness Frederick, prince of Wales, who appointed him to instruct his children in speaking and reading with a graceful propriety; and being informed of the elegant manner in which his present majesty delivered his first gracious speech from the throne, he cried out in a kind of ecstasy, "Ay,—I taught the boy to speak!" Nor did his majesty forget his old tutor; for soon after his accession to the throne, he gave orders, without any application being made to him, that a genteel pension should be paid to Mr. Quin during life. As he never was married, and had only distant relations, he sunk 2000 l. which was half his fortune, in an annuity, for which he obtained 200 l. a year; and with about 2000 l. more in the funds, lived in a decent manner during the latter part of his life at Bath. He died of a fever on the 21st of January 1766, in the 73d year of his age.

QUINCUNX, in astronomy, &c. denotes an aspect of the planets, when distant from each other one hundred and fifty degrees, or five signs.

QUINDECAGON, or rather pentdecagon, in geometry, a plain figure which has fifteen sides, and as many angles.

If the sides be all equal, it is a regular quindecagon. The side of such a quindecagon inscribed in a circle, by Eucl. prop. 16. l. 3. is equal in power to the half difference between the side of the equilateral triangle and the side of the pentagon, as also to the difference of the perpendiculars let fall on both sides taken together.

QUINQUAGENARIUS, among the Romans, was an officer in the army who had the command of a company of fifty men. There was also an officer of policy so called, who had the inspection of fifty houses or families.

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QUINQUAGESIMA SUNDAY, Shrove-Sunday; so called, as being about the fiftieth day before Easter.

QUINQUINA, in pharmacy, the name of a very useful medicine called also Peruvian bark; it being the bark of a tree growing into Peru. The tree producing this bark is of a middling size, called by the Spaniards, from its efficacy against intermitting fevers, *palo de calenturas*, or the fever tree. This virtue of the bark is said to have been discovered by the Indians about the year 1500, but not revealed to their European masters till 140 years after; when a signal cure having been performed by it on the Spanish viceroy's lady, the countess del Cinchon, it came into general use in those parts, and was distinguished by the appellations *pulvis cinnifoliae*, *cortex china china* or *chinchina*, *kina kina*, or *kinkina*, and *quina quina*, or *quinquina*. In 1649, a Jesuit brought a large quantity of it into Italy, which was distributed by the fathers of that order, at a great price, in different parts of Europe; about the same time a quantity was purchased by cardinal de Lugo for the use of the poor at Rome. From thence it received the names of *cortex* or *pulvis Jesuiticus*, *pulvis patrum*, and *pulvis cardinalis de Lugo*.

This bark is brought to us in pieces of different sizes, some rolled up into short thick quills, and others flat: the outside is brownish, and generally covered in part with a whitish moss: the inside is of a yellowish, reddish, or rusty iron colour. The best sort breaks close and smooth, and proves friable betwixt the teeth: the inferior kinds appear when broken of a woody texture, and in chewing separate into fibres. The former pulverizes more easily than the latter, and looks, when powdered, of a light brownish colour, resembling that of cinnamon, but somewhat paler.

A bark was some time ago brought from America under the name of the female Peruvian bark. This was found, from experience, to be less effectual as a medicine than the genuine sort, which it was frequently substituted to or mixed with in France, insomuch that its importation, as the editor of Geoffroy informs us, was prohibited by law. It is considerably thicker, whiter on the out side, redder within, and weaker in smell and taste than the true bark.

Peruvian bark has a slight smell, approaching as it were to mustiness, yet so

much of the aromatic kind as not to be disagreeable. Its taste is considerably bitter, astringent, very durable in the mouth, and accompanied with some degree of aromatic warmth, but not sufficient to prevent its being ungrateful.

The febrifuge virtue, for which alone this medicine was at first recommended, has now been established by the daily experience of about a century: and that, when judiciously and seasonably administered, it proves as safe as it is effectual, is now also beyond dispute. An emetic, which is in most cases necessary, being taken towards the approach of a paroxysm, that its operation may be over before the fit comes on: the bark is begun at the end of the paroxysm, or even in the time of the hot fit, and repeated, in doses of half a dram or more, every third or fourth hour, during the intermission: after the fever has been removed, the medicine is continued for a time, but more sparingly, to prevent a return. During the use of the bark, the pulse, which betwixt the paroxysms is generally weak and slow, becomes stronger and quicker, the appetite mends, the patient grows more chearful, and perspiration increases: these may be looked upon as sure presages of its success. At first it frequently occasions a looseness, and this also is salutary; but if the purging runs on too long, as the fever rarely yields while this evacuation continues, it is usually checked by the addition of a little opium: if too great costiveness ensues, recourse is had to clysters. In gross impure habits, gentle purgatives are premissed to the bark, or given for a time in conjunction with it: in agues of the inflammatory kind, or accompanied with a great heat, a little nitre is joined or interposed: in lax spongy constitutions, and a thin watery state of the blood, the bark is assisted by bitters, snake-root, camphor, and chalybeates: where obstructions of the abdominal viscera are apprehended, it is not ventured on without the addition of fixed alkaline salts, sal ammoniac, or other aperients. In all cases, moderate exercise, and the drinking of warm liquids, promote its effects.

In remitting fevers, this medicine is less successful than in those which have perfect intermissions: in heclics, or wherever pus is formed, or juices extravasated, it does harm. In the decline of long nervous fevers, or after a remission, and in those of the low malignant kind, where

where the blood is colliquated and the strength exhausted, it proves an excellent cordial, corroborant, and antiseptic.

Peruvian bark has likewise been found serviceable in gangrenes and mortifications, and in foul obstinate ulcers and running sores of other kinds; in these cases, taken in large and repeated doses, it frequently brings on a laudable suppuration, which degenerates on discontinuing the use of the medicine, and again turns kindly upon resuming it. The like effects have been observed from it in various cases, where either the pustules did not duly suppurate, or the petechiæ shewed a disposition to a gangrene: by the use of the bark, the empty vesicles filled with matter, watery sanies changed into thick white pus, and the petechiæ became gradually paler, and at length disappeared. The principal symptom in this disease that contraindicates this valuable suppurant and antiseptic, is great obstruction at the breast, or difficulty of breathing; which are always by this medicine increased, inasmuch that small doses have in some cases endangered suffocation.

In tumours of the glands, the Peruvian bark appears to promote not suppuration, but resolution. In the Medical Observations and Inquiries published by a Society of physicians in London, there are several instances of its being given with success in serophulous complaints. Dr. Fothergill observes, that inveterate ophthalmiæ generally yield to it; that beginning glandular tumours are very frequently resolved, and their farther progress stopt by it: that swelled lips, cutaneous blotches arising from a like cause, are healed, and the tendency to a sturuous habit corrected: that it does not succeed in all cases, but there are few in which a trial can be attended with much detriment: that he has never known it to avail where the bones were affected, or where the serophulous tumour was so situated as to be attended with much pain, as in the joints, or under the membranous covers of the muscles; for when it attacks these parts, the periosteum, and consequently the bone, seldom escape being injured; that here the bark, instead of lessening, adds to the fever which accompanies these circumstances, and if it does not increase the force of the mischief, seems at least to hasten its progress.

Peruvian bark has been applied likewise, in conjunction with other appropriated medicines, and often with good

success, to the cure of periodic head aches, hysterical, hypochondriacal, vertiginous and epileptic complaints, and other disorders that have regular intermissions. By its bitterness, astringency, and mild aromatic warmth, it strengthens the whole system, and proves a medicine of great utility in weakness of the stomach, uterine fluxes, and sundry chronical diseases proceeding from a laxity and debility of the fibres. To strengthen the solids appears indeed, in all cases, to be its primary operation; and its salutary virtues in different diseases, to be no other than consequential effects of this general power. In all the distempers where bark is known to take place, other astringent and bitter medicines, singly or combined, have likewise been of service, though not equally with this natural combination of them.

It is a common opinion, that bark in substance is more effectual than any preparation of it. Thus much is plain, that the infusions, as well as the decoctions, have not near so much effect as the quantity of bark they were made from, as the menstruum does not in either case completely extract its active matter: but their effects are evidently the same in kind, and the difference in degree may be compensated by an increase in the quantity.

QUINTAL, in commerce, a hundred pounds weight. The quintal admits of some difference in different places, according as the pound consists of more or fewer ounces. The English quintal usually consists of one hundred and twelve pounds avoirdupois, and is divided into four quarters.

QUINTESSENCE, QUINTA ESSENTIA, in chemistry, a preparation consisting of the essential oil of some vegetable substance, incorporated with spirit of wine.

Of this there are two kinds, namely, liquid and dry: the former is produced by putting any distilled aromatic or essential oil into a clean dry glass, and pouring to it twelve times its quantity of pure alcohol distilled from alkali, so as not to contain the least water: shake them together, and the oil will intirely mix with the alcohol, so as to form one simple transparent liquor. Dry quintessences are got by pouring alcohol, wherein an aromatic oil is dissolved, upon ten times its weight of dry loaf sugar, reduced to a fine powder. Grind them exactly together in a glass body, kept on all sides moderately warm, that the remaining spirit,

spirit may gently exhale, and, by means of a still-head, be collected in the form of a liquid quintessence; and thus the sugar will remain dry, yet impregnated with the quintessence. Let this now be put immediately into a glass vessel close stopp'd, and preserved for use.

QUINTILE, QUINTILIS; in astronomy, an aspect of the planets, when they are 72 deg. distant from one another, or a fifth part of the zodiac.

QUINZY, QUINSEY, or Angina, in medicine, a pain and inflammation of the fauces, a swelling of the uvula, tonsils, and larynx, which being accompanied with a fever, occasions a difficulty of respiration and deglutition. This disease generally prevails about the latter end of spring or beginning of summer. When the swelling, pain, and redness, appear mostly on the out-sides, it is, according to Hoffman, the prognostic of a happy solution of the disease: but when the external swelling suddenly disappears, without a mitigation of the symptoms, it shews the morbid matter to be translated elsewhere, and that the disease will change to a frenzy, or peripneumony. This disease may also terminate in a supuration, gangrene, or schirrus. A frothing at the mouth, the tongue vastly swelled, and of a purple, blackish colour, portend death.

The quinzy is generally distinguished by modern writers into the idiopathic and symptomatic. The first, where it is itself the disease, and owes its origin only to a plethora; the second, where it is but the accidental symptom of an inflammatory fever, or some other disease, about the time of its crisis.

Dr. Mead distinguishes the quinzy into three sorts; the first of which he calls the watery quinzy; the second, a gangrene of the tonsils; and the third, a strangulation of the fauces. In the first sort, the glands of the mouth, palate, and neighbouring parts are swollen. In the second, an inflammation without a perfect suppuration seizes the tonsils, which swell and grow hard; a gangrene soon ensues, which, if not speedily relieved, proves fatal.

In the third sort, all the nerves are convulsed, and the patient drops down dead suddenly: however, this species of quinzy, though described by Hippocrates, is yet very rare. If it can be foreseen, it ought to be prevented by evacuations of all kinds: that is, bleeding, purging, blistering, issues, and diuretics; and it will be of service to practice abstinence,

or a moderation in eating and drinking. In the watery quinzy, which sometimes rages like an epidemic fever, especially in places near the sea, bleeding plentifully as soon as possible is recommended; afterwards clysters, gentle purges, blisters under the chin, and on the sides of the neck; and if this course does not succeed, the palate must be pretty deeply scarified about the tongue and sublingual veins.

In these inflammations in general, a slight diarrhoea relieves the patient, according to Arbuthnot. Therefore allments which promote it are of service; such are tamarinds infused in whey, decoctions of farinaceous vegetables moderately acidulated, and such as abound with a cooling nitrous salt are useful. Burnet is said to be a specific in the quinzy; mulberries, and all acids are beneficial. The mouth and throat must be kept moist, and the nose clear, that the air may have a free passage through it. Sydenham orders to bleed plentifully in the arm, and Boerhaave directs it to be by a large orifice. Afterwards a sublingual vein should be opened; but, according to Hoffman, bleeding in the jugular yields the best assistance. If the symptoms continue to be very urgent, the bleeding may be repeated in six or eight hours time, till they begin to be more mild. After the first bleeding, Sydenham orders a strong and large blister to be laid to the neck: then let the parts inflamed be touched with the following mixture. Take honey of roses, as much as you please; and mix it with as much spirit of sulphur as is sufficient to give it the greatest sharpness. Afterwards the following gargle is to be held in the mouth till it is hot; and is to be repeated pretty often: take plantain water, and frog-spawn, of each four ounces; red roses, four ounces; the whites of three eggs beat in water; and two drams of crystal sugar.

When the fauces are dry, hot, and the tongue swells, with difficulty of breathing and swallowing, Hoffman orders to take of the whites of eggs beat in water, two ounces; water of roses, one ounce; sal prunella, twelve grains; syrup of quinces, one ounce. Make a linctus, which is to be taken often; and let the neck be anointed as well behind as before with the following camphorated oil. Take of the oil of sweet almonds one ounce; oil of white poppies, one dram; camphor half a dram; after which let the patient take a cooling emulsion.

Boerhaave

QUI

Boerhaave, after bleeding, orders a strong purge, and if that cannot be taken a strong clyster. Emollient steams, or even the steam of hot water taken in at the mouth, is beneficial. If the patient is not able to swallow any nourishment, take of good broths of flesh-meat, ten ounces; nitre, ten grains; spirit of salt, six drops: make a clyster to be injected every eight hours, and retained as long as is possible. Hoffman says, that if the tumour tends to a suppuration, it is best promoted by holding dried figs in the mouth, and that when the tonsils are full of an inflammatory ichor, honey of roses, mixt with spirit of vitriol, and often applied to the part with a pencil, is excellent. In a latent internal exceeding hot quinzey, the mouth must be frequently moistened with milk or cream, with an addition of sal prunella and syrup of poppies.

Dr. Pringle observes, that the inflammatory quinzey is most frequent, as well as dangerous among soldiers, upon their first encampment; and that its tendency to bring on a suffocation, indicates the necessity of speedy and large bleedings, purging, and blistering. He also recommends the following application, as one of the most efficacious remedies in this terrible disorder: let a piece of thick flannel be moistened with equal parts of any common oil and of spirit of hartshorn, and applied to the throat, to be renewed once in four or five hours: this medicine, he tells us, he had from Dr. Young, physician in Edinburgh. By means of this application, the neck, and sometimes the whole body, is put into a sweat; which, after bleeding, either carries off or lessens the inflammation. He also tells us, that he has observed little benefit arising from gargles, and that the acid ones did more harm than good: however, a decoction of figs in milk and water, especially if the spirit of sal ammoniac be added, serves to thin the saliva, whereby the glands secrete more freely; a circumstance always conducive to the cure.

In the Philosophical Transactions, the jelly of black currants, swallowed down leisurely in small quantities, is asserted to be a specific for a quinzey; and a decoction of the leaves or bark in milk, when the jelly cannot be had, used as a gargle, is said to cure all the inflammatory distempers of the throat that happen in the winter time.

In malignant fevers, when there is an inflammation of the œsophagus, Hoffman

QUO

orders to take nitre, one dram; camphor, three grains; sugar, one ounce; make a powder, which is to be given in an emulsion of sweet almonds, and may also be held in the mouth for some time before it is swallowed. That inflammatory pain which arises from a sharp salt serum in the glandulous parts of the fauces with redness and a copious flux of saliva, but without a fever, may be cured with a gargle of brandy alone. When there is a large defluxion of an impure serous humour upon the fauces, it requires a frequent use of gentle laxatives. When the symptoms of a quinzey are so urgent, that the patient is in immediate danger of strangling, recourse must be had to bronchotomy, or opening of the wind-pipe.

QUINK, in building, a piece of ground taken out of any regular ground-plot, or floor: thus if the ground-plot were oblong or square, a piece taken out of a corner to make a court or yard, &c. is called a quink.

QUIRE of paper, the quantity of twenty-four or twenty-five sheets.

QUIT-RENT, in law, a small rent payable by the tenants of most manors, whereby the tenant goes quit and free from all other services; and it is said to be an acknowledgment, in token of subjection to the lord. Anciently this payment was called white rent, on account of its being paid in silver coin, and to distinguish it from rent-corn.

QUOINS, in architecture, denotes the corners of brick or stone walls. The word is particularly used for the stones in the corners of brick-buildings. When these stand out beyond the brick-work, their edges being chamfered off, they are called rustic quoins.

QUORUM, a word frequently mentioned in our statutes, and in commissions both of justices of the peace and others. It is thus called from the words of the commission, *quorum A. B. unum esse volumus*. For an example, where a commission is directed to seven persons, or to any three of them, whereof A. B. and C. D. are to be two; in this case they are said to be of the quorum, because the rest cannot proceed without them: so a justice of the peace and quorum is one without whom the rest of the justices in some cases cannot proceed.

QUOTATION, in literature, a citation, or passage verbatim from another author.

QUOTATIONS are usually distinguished by inverted commas.

QUOTIDIAN, in medicine, an intermittent

Q U O

terminating fever, or ague, the paroxysm or fit whereof returns every day. This species of intermittent fevers is not so common as the tertian and quartan. It attacks the patient early in the morning with chilliness and shivering; to which succeed a cardialgia, nausea, and inflation of the belly; in some a pain in the head, in others fainting fits, and in most vomiting or stools, or both; after which comes on the hot fit, with thirst.

As to the cure, the best method seems to be, first, to attenuate the tough and vitiated humours in the stomach and intestines, by proper doses of vitriolated tartar, and the like; after which a gentle emetic, diaphoretics and diluents are to

be administered; and lastly, the bowels are to be strengthened by bitters and sub-astringents; among which, the Peruvian bark claims a place, only to be used in smaller quantities than when trusted to alone for the cure.

QUOTIENT, in arithmetic, the number which arises by dividing the dividend by the divisor. See *Division*.

QUO WARRANTO, in law, a writ lying against a person or corporation that usurps any franchise or liberty against the king; as to have a fair, market, or the like, in order to oblige the usurper to shew by what right and title he holds or claims such franchise.

Q U O

R A B

R A liquid consonant, and the seventh letter of the alphabet. The grammarians contend that it is a semi-vowel, especially in the Greek, where it admits an aspirate. The Hebrews allow it the privilege of a guttural, that is, they never double it, which is done by the Arabs, Greeks, Latins, &c. Its sound is formed by a guttural extrusion of the breath, vibrated through the mouth, with a sort of quivering motion of the tongue drawn from the teeth, and cannulated with the tip a little elevated towards the palate. It has but one sound, and is followed by an *b* in Greek words, as *rhēphōdy*, *rhētoric*, &c. otherwise it is always followed by a vowel at the beginning of words and syllables.

Used as a numeral, *R* anciently stood for 80, and with a dash over it thus, *R̄*, 80,000; but the Greek *ρ*, or *p*, signified 100.

In the prescriptions of physicians, *R* or *R* stands for *recipe*, that is, take.

RABBIT, in ship-building, when a plank is to be fastened to any piece of timber, such as the stern or post, there is so much wood cut out of the piece as the plank is thick, which is called the rabbit; and when the plank is let into this rabbit, it will be even with the outside of the piece, as at the after-end of

R.

the keel, and lower-end of the stern-post. *Murray's Ship-building*.

RABETTING, in carpentry, the planing, or cutting of channels or grooves in boards, &c. In ship carpentry, it signifies the letting in of the planks of the ship into the keel; which, in the rake and run of a ship, is hollowed away, that the planks may join the closer.

RABBI, or **RABBINS**, a title which the Pharisees and doctors of the law among the Jews assumed, and literally signifies masters or excellents. Among the modern Jews, for near seven hundred years past, the learned men retain no other title than that of *rabbi*, or *rabbins*: they have great respect paid them, have the first places or seats in their synagogues, determine all matters of controversy, and frequently pronounce upon civil affairs: they have even a power to excommunicate the disobedient.

RABBINET, a small piece of ordinance, between a falconet and a base.

* **RABELAIS**, Francis, a celebrated French writer, was the son of an apothecary, and born at Chinon in 1483. He took the habit of a Franciscan in the monastery of Fontenay le Comte, in Lower Poitou, where he became well skilled in the languages, and particularly in the Greek. His sprightly and facetious temper

R A B

per procured him many powerful protectors, who encouraged his inclination to abandon his cloister, and obtained leave from pope Clement VII. for him to enter the order of St. Benedict, in the monastery of Mallezais. Rabelais afterwards quitted the religious habit, and went to Montpellier to study physic, where he published Hippocrates's Aphorisms in Latin, and took his doctor's degree. It is said, that the chancellor Du Prat having abolished the privileges of the faculty of physic at Montpellier, by a decree of the parliament, Rabelais had the address to make him revoke what he had done, and that those who were made doctors of that university, wear Rabelais's robe, which is there held in great veneration. His capacity at length made him known at Paris; and cardinal John du Bellay, bishop of that city, chose him for his physician in ordinary, in which character he took him to Rome, where Rabelais could not avoid joking in the presence of pope Paul III. That cardinal procured for him a bull of absolution, for having quitted his religious habit. He employed him, at his return, in some negotiations, and gave him a prebend at St. Maur de Fosses, with the parsonage of Meudon: about this time Rabelais wrote his Pantagruel. He died at Paris in 1553, aged 70. There have been a great number of editions of his works. His writings are filled with railery and satire; which have been esteemed so ingenious, that the learned have compared him to Lucian. However, it must be acknowledged that they are too licentious; and not only extremely obscene, but stuffed with the grossest obscenities.

RABINISTS, among the modern Jews, an appellation given to the doctrine of the Rabbins concerning traditions, in opposition to the Caraites, who reject all traditions.

RABBIT, *Cuniculus*, in zoology, a well known animal of the *lepus*, or hare kind, with a very short tail. The female, or doe rabbit, goes with young thirty days, and then she kindles; and if she take not buck presently, she loses her month, or at least a fortnight, and often kills her young and eats them. In England they begin to breed at a year old, but in some places much sooner; and they continue breeding very fast from the time when they begin, four, five, six, or seven times a year being common with them: They have usually from four to seven in a litter, and hence it is that a small number at

first will soon stock a whole warren, if left to breed a little while undisturbed. The does cannot suckle their young till they have been at buck again: this therefore is to be done presently, else there is a fortnight lost of the time for the next brood, and the present brood also probably lost. The buck rabbits, like boar cats, will kill the young ones, if they can get at them; and the does in the warrens prevent this, by covering their stocks, or nests, with gravel or earth, which they close so artificially up with the hinder part of their bodies, that it is hard to find them out. They never suckle the young ones at any other time than early in the morning, and late at night; and always, for eight or ten days, close up the hole at the mouth of the nest, in this careful manner, when they go out. After this, they begin to leave a small opening, which they increase by degrees, till at length, when they are about three weeks old, the mouth of the hole is left wholly open, that they may go out; for they are at that time grown big enough to take care of themselves, and to feed on grass. People who keep rabbits tame for profit, breed them in hutches; but these must be kept very neat and clean, otherwise they will be always subject to diseases. Care must be taken also to keep the bucks and does apart, till the latter have just kindled, then they are to be turned to the bucks again, and to remain with them till they shun and run from them. The general direction for the chusing of tame rabbits is, to pick the largest and fairest; but the breeder should remember, that the skins of the silver-haired ones sell better than any other. The food of the tame rabbits may be colewort and cabbage-leaves, carrots, parsnips, apple-rinds, green corn, and vetches, in the time of the year; also vine-leaves, grass, fruit, oats, and oatmeal, milk-thistles, sow-thistles, and the like; but with these moist foods they must always have a proportionable quantity of the dry foods, as hay, bread, oats, bran, and the like, otherwise they will grow pot-bellied, and die. Bran and grains mixed together have been also found to be very good food. In winter they will eat hay, oats, and chaff, and these may be given them three times a day; but when they eat green things, it must be observed that they are not to drink at all, for it throws them into a dropsy. At all other times a very little drink is sufficient, but that must always be fresh. When any green

herbs or grafs are cut for their food, care must be taken that there is no hemlock among it, for, though they will eat this greedily among other things, when offered to them, yet it is sudden poison to them. Rabbits are subject to two principal infirmities. First, the rot, which is caused by the giving them too large a quantity of greens, or from the giving them fresh gathered, with the dew or rain hanging in drops upon them. It is over moisture that always causes this disease: the greens therefore are always to be given dry, and a sufficient quantity of hay, or other dry food, intermixed with them, to take up the abundant moisture of their juices. On this account, the very best food that can be given them, is the shortest and sweetest hay that can be got, of which one load will serve two hundred couples a year; and out of this stock of two hundred, two hundred more may be eat in the family, two hundred sold to the markets, and a sufficient number kept in case of accidents. The other general disease of these creatures is a sort of madness: this may be known by their wallowing and tumbling about with their heels upwards, and hopping in an odd manner into their boxes. This distemper is supposed to be owing to the rankness of their feeding; and the general cure is the keeping them low, and giving them the prickly herb, called tare-thistle, to eat. The general computation of males and females is, that one buck rabbit will serve for nine does; some allow ten to one buck; but those who go beyond this, always suffer for it in their breed.

The wild rabbits are to be taken either by small cur dogs, or by spaniels bred up to the sport; and the place of hunting those who straggle from their burrows is under close hedges or bushes, or among corn-fields and fresh pastures. The owners use to course them with small greyhounds, and, though they are seldom killed this way, yet they are driven back to their burrows, and are prevented from being a prey to others. The common method is by nets, called purse nets, and ferrets. The ferret is sent into a hole to force them out, and the purse net being spread over the hole, takes them as they come out. The ferret's mouth must be muffled, and then the rabbit gets no harm. For the more certain taking of them, it may not be improper to pitch up a hay net or two, at a small distance from the burrows that are intended to be hunted:

thus very few of the number that are attempted will escape.

Some who have not ferrets, smother the rabbits out of their holes with burning brimstone and orpiment. This certainly brings them out into the nets; but then it is a very troublesome and offensive method, and is very detrimental to the place, as no rabbit will for a long time afterwards come near the burrows which have been fumed with these stinking ingredients.

* RACINE, John, a celebrated French dramatic poet, was born at La Ferte Milon on the 21st of December, 1639. He was educated at Port Royal, and discovered from his infancy an extraordinary taste and great fondness for polite literature. He took a particular delight in the study of the ancient Greek authors, and frequently retired to the wood of Port Royal, where he employed himself whole days in reading Homer, Sophocles, and Euripides, whose language became as familiar to him as his own. He was but 21 years of age when he brought his *Thebaide* on the stage; but though that tragedy was inferior to the excellent pieces then produced by Corneille, whose tragedies alone at that time demanded the esteem and admiration of the public, yet it made Racine be considered as a young man who had the courage to enter the lists with that great poet, and to aspire to the same applause; and indeed Racine wrote successively nine other tragedies, which were not less admired than those of Corneille; and the public were even divided in their sentiments in determining which of these great men wrote the most perfect tragedies. Both parties, however, allowed that Racine had all the qualifications which distinguish a great poet. He was received into the French academy in 1673; and Lewis XIV. chose him to write his history, but he found it was not suitable to his genius. He spent the latter years of his life in composing a history of the house of Port Royal, the place of his education, but it has never been published. Though he had conversed much with the court, he had not learnt to disguise his sentiments; for having drawn up a well-written memorial upon the miseries of the people, and the means of relieving them, he lent it to Madam de Maintenon to read; when the king coming in, and demanding whose, and what it was, commended Racine's zeal, but disapproved of his meddling with what did not concern him, saying, in an an-

RAC

grey tone, "Because he knows how to make good verses, does he think he knows every thing? Would he be minister of state because he is a great poet?" This greatly affected Racine, who conceived such dreadful ideas of the king's displeasure, as brought on a fever, of which he died the 22d of April, 1669, aged 60. The king, who was sensible of his great merit, and always loved him, sent often to him in his illness; and finding after his death that he had more glory than riches, settled a handsome pension upon his family.

RACK, a wooden frame, made to hold hay or fodder for cattle.

RACK, an engine of torture, furnished with pulleys and cords, &c. for extorting confessions from criminals.

RACK, ARAC, or ARRAC, in commerce, a spirituous liquor made by the Tartars of Tongutia, who are subject to the czarina of Muscovy. This kind of rack is made of mares milk, which is left to be sour, and afterwards distilled twice or thrice between two earthen pots closely stopped, from whence the liquor runs through a small wooden pipe. This liquor is more intoxicating than brandy distilled from wine.

Rack is also a spirituous liquor which the English get from Batavia or Malacca, of which there are three sorts; the one being extracted from the cocoa-tree, the second from rice, and the third from sugar; but the first is the best, and most in use. It is made of the blossom-bunch of the cocoa-tree; for which purpose they tie the bunch while it is still wrapped up within its coat, or membrane, with a piece of packthread, and then with a knife make a cross cut in that bunch, a little above the place where it is tied, and adapt a pitcher to it to receive the liquor, which is called toddy, and is vinous, palatable, and sweet; others use a bamboo-cane instead of a pitcher. Having thus drawn the liquor, they let it ferment, and afterwards distil it.

Goa and Batavia are the chief places for rack. At Goa there are several kinds; single, double, and treble distilled; but the double distilled, which is that commonly sent abroad, is but a weak spirit when compared with Batavia rack; yet, on account of its peculiar and agreeable flavour, it is preferred to all the other racks of India. The Prior rack, made at Madras, the Columbo and Quilone rack, being fiery hot spirits, are but little valued by the Europeans, and there-

RAD

fore seldom imported, though they are highly prized among the natives.

To RACK wings, &c. to draw them off from their lees, after having stood long enough to clear and settle.

RACKET, a kind of bat to strike the ball with at tennis; usually consisting of a lattice or net-work of catgut strained very tight in a circle of wood, with a shaft or handle.

RACKET is also a kind of snow-shoe, or machine, which the savages of Canada bind to their feet, to enable them to walk more commodiously on the snow; made much in the manner of a tennis racket.

RACKING, or RAGGING, the tackles, in the sea language, the act of seizing or fastening two opposite parts of a pulley together, to prevent them from running through the blocks. When a vessel rides in an open road or harbour, where it is apprehended the crew may seize the boats to desert, it is usual to hoist the boats up to the upper part of the ship's side in the evening, and to let them hang by the tackles all night. But lest any one through negligence should loosen the rope of the tackle, so as to let the boat, or one end of it, fall into the sea, the tackles are racked or tied together above the blocks.

RACKOON, in zoology, an American quadruped of the shape of a beaver, but somewhat smaller, and with the hair like that of a fox, except that the ears are shorter, roundish, and naked; its tail is longer than its body, and not unlike that of a cat, with annular streaks of different colours.

* RADCLIFFE, JOHN, a celebrated physician, was born in the year 1650 at Wakefield in Yorkshire, where his father had a moderate estate. He was taught Latin and Greek at a school in the same town, and afterwards studied at University college, Oxford, but no fellowship becoming vacant, he removed to Lincoln college, where he obtained one. He applied himself to physic, and ran through the necessary courses of botany, chemistry, and anatomy, in all which he soon made a considerable progress. It is however remarkable, that in the practice of physic he seldom looked farther than the pieces published by Dr. Wallis, who then practised in London with great success. He had few books of any kind; so that when Dr. Bathurst, who was head of Trinity college, asked him once in a surprise, where was his study? Radcliffe, pointing

pointing to a few phials, a skeleton, and an herbal, answered, "Sir, this is Radcliffe's library." In 1675 he proceeded bachelor of physic, and immediately began to practise, paying no regard to the rules universally followed, which he frequently censured with great freedom and acrimony. This drew all the old practitioners upon him, with whom he waged an everlasting war. But before he had practised two years, his business became very extensive, even among those of the highest rank. In 1682 he went out doctor, and two years after came to London, and settled in Bow-street, Covent-garden, and in less than a year got into very extensive practice. His conversation contributed as much to his making his way, as his reputed skill in his profession; for having much pleasantry and readiness of wit, he was a most diverting companion. In 1686, the princess Anne of Denmark made him her physician; and the next year, being willing to shew his gratitude to University college, where he had received the best part of his education, he caused the east window over the altar to be put up at his own expence: it is esteemed very beautiful, the nativity of our Saviour being finely painted on the glass. In 1688, when the princess Anne retired to Nottingham, he was pressed by Dr. Compton to attend her in virtue of his office, she being then pregnant, with the duke of Gloucester: but not favouring the measures then in agitation, he excused himself on account of the multiplicity of his patients; yet after the revolution he was frequently sent for to king William. In 1693 he entered into a treaty of marriage with the daughter of a wealthy citizen, but before it was concluded, it was discovered that the young lady had already consummated with her father's book-keeper; and from this circumstance he entertained such a dislike to the whole sex, that he often declared he wished for an act of parliament, whereby nurses only should be entitled to prescribe to them. In 1694, queen Mary died of the small-pox. "The physicians part," says bishop Burnet, "was universally condemned, and her death was imputed to the negligence or unskillfulness of Dr. Radcliffe. He was called, and it appeared but too evidently that his opinion was chiefly considered, and most depended on." Soon after he lost the favour of the princess Anne, by refusing to leave his bottle in order to obey her call, and another physician was elected into his

place. Indeed he was a great votary to Bacchus, to whom he offered both his morning and evening sacrifices. Some time after he also affronted king William, who in 1669 shewed him his swelled ankles, while the rest of his body was emaciated, he said, What think you of these? "Why, truly," replied Radcliffe, "I would not have your majesty's two legs for your three kingdoms." This so lost the king's favour, that no intercessions could ever recover it. On queen Anne's coming to the throne, the earl of Godolphin strenuously endeavoured to reinstate him in his former post of chief physician; but she alledged, that Radcliffe would send her word again, that her ailments were nothing but the vapours. Yet he was admitted in all cases of emergency, and received large sums for his prescriptions behind the curtain. Many stories are related of his rudeness and his humorous behaviour. We shall here give an instance, in which he shewed that he could bear a very considerable loss without the least discomposure. In 1692 he ventured 5000 l. in a private trading vessel to the East Indies, with the prospect of a large return; but the ship being taken by the French, he lost the whole sum. When the news was brought him, he answered with the utmost calmness, that he had nothing to do but to go up so many pair of stairs to make himself whole again. He continued in full business, increasing his wealth till his death, which happened on the 1st of November 1714, engaged 64. He was a great benefactor to the university of Oxford, in founding the library which bears his name.

RADIAL CURVES, curves of the spiral kind, whose ordinates, if they may be so called, all terminate in the center of the including circle, appearing like radii of that circle; whence the name. See *Curve* and *Spiral*.

RADIALIS, or **RADIEUS**, in anatomy, the name of two muscles of the arm, one of which, called *radialis internus*, is one of the three flexor muscles of the carpus, or hand, which arising from the internal condyle of the humerus, is inserted into the bone of the carpus next the thumb; and the other, called *radialis externus* is one of the three extensor muscles of the hand, which arising from the external condyle of the humerus, is inserted into the first metacarpal bone.

RADIANT, or **RADIATING POINT**,
in

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in optics, any point of a visible object, from whence rays proceed.

RADIATED FLOWERS, in botany, such as have several semi-flores round a disk, in the form of a radiant star; those which have no such rays are called discous flowers.

RADIATION, the act of a body emitting or diffusing rays of light all around, as from a center.

RADICAL, in general, something that serves as a basis or foundation. In grammar, we give the appellation radical to primitive words, in contradistinction to compounds and derivatives. Algebrists also speak of the radical sign of quantities, which is the character expressing their roots.

RADICLE, that part of the seeds of all plants, which upon vegetating becomes its root, and is discoverable by the microscope.

RADISH, in botany, a genus of plants, the flower of which consists of four leaves, which are placed in form of a cross, out of the flower cup rises the pointal, which afterwards turns to a pod in form of an horn, that is thick, spongy, and furnished with a double row of roundish seeds, which are separated by a thin membrane.

There are several species of radish, but we shall only mention that which is commonly cultivated in kitchen-gardens for its root; of which there are several varieties, as the small-topped, the deep red, and the long-topped striped radish; all which are varieties arising from culture. The small-topped sort is most commonly preferred by the gardeners near London, because they require much less room than those with large tops, and may be left much closer together; and, as the forward radishes are what produce the greatest profit to the gardener, so these being commonly sown upon borders near hedges, walls, or pales, if they are of the large-topped sort, they will be apt to grow mostly at top, and not swell so much in the root as the other, especially if they are left pretty close.

The seasons for sowing this seed are various, according to the time when they are desired for use; but the earliest season is commonly towards the latter end of October, that the gardeners near London sow them to supply the market; and these, if they do not miscarry, will be fit for use in March following, which is full as soon as most people care to eat them. These, as I said before, are commonly

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sown on warm borders, near walls, pales, or hedges, where they may be defended from the cold winds.

The second sowing is commonly about Christmas, provided the season be mild, and the ground in a fit condition to work: these are also sowed near shelter, but not so near pales and hedges as the first sowing. These, if they are not destroyed by frost, will be fit for use the beginning of April: but, in order to have a succession of these roots for the table through the season, you should repeat sowing of their seeds once a fortnight, from the middle of January till the beginning of April; always observing to sow the latter crops upon a moist soil and an open situation, otherwise they will run up, and grow sickly, before they are fit for use.

Horfe **RADISH**, a well-known plant, belonging to the genus *cochlearia*. Horfe radish is propagated by cuttings or buds from the sides of the old roots. The best season for this work is in October or February; the former for dry lands, and the latter for moist. The manner of doing it is as follows: Provide yourself with a good quantity of off-sets, which should have a bud upon their crowns; but it matters not how short they are: therefore the upper part of the roots, which are taken up for use, should be cut off about two inches long with the bud to it, which is esteemed the best for planting. Then make a trench ten inches deep, in which you should place the off-sets at about four or five inches distance each way, with the bud upward, covering them up with the mould that was taken out of the trench: then proceed to a second trench in like manner, and continue the same until the whole spot of ground is planted. After this, level the surface of the ground even, observing to keep it clear from weeds, until the plants are so far advanced, as to be strong enough to over-bear and keep them down. With this management, the roots of the horfe radish will be long and straight, and free from small lateral roots; and the second year after planting will be fit for use. It is true, they may be taken up the first year, but then the roots will be but slender; therefore it is the better way to let them remain until the second year. The ground in which this is planted ought to be very rich, otherwise the roots will make but a small progress.

Radishes have the virtues of the scurvy-grass; the root is esculent, expels

phlegm

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phlegm from the intestines, and is a carminative. The flowers, leaves, seeds, and roots are antiscorbutic; for which reason they are much in request, and are proper for phlegmatic constitutions: the expressed juice of the roots and seeds, taken in a morning with honey, is a very wholesome medicine, especially if a draught of whey be taken afterwards: for it cleanses the stomach, kidneys, and lungs, and is good against an inveterate cough and hoarseness, proceeding from phlegm; but it is not proper in a cough proceeding from an inflammation, nor for those who spit blood. The leaves are used among other greens. The root contains much of an acrimonious substance; and the drier it is, the more acrid it becomes; but its acrimony is lost in boiling. Its aquality renders it flatulent, on which account it is said not to be good in hypochondriacal disorders; the daily use of the root, however, is of sufficient efficacy to cure a great dropsy in the beginning; and it is of excellent service in the scurvy. It is also aperitive, inciding, and good for the stone, the nephritic cholic, a retention of urine, and the menses, and in the jaundice. The seeds are opening, but taken inwardly by themselves, they excite a nausea. *Hist. Plant. ascript. Boerhaave.*

RADIUS, in geometry, the semi-diameter of a circle, or a right line drawn from the center to the circumference. See *Circle*.

In trigonometry, the radius is termed the whole sine, or sine of 90° . See *Sine*.

RADIUS, in anatomy, the exterior bone of the arm, descending along with the ulna, from the elbow to the wrist.

RADIX, the same with root. See *Root*.

RAFT, among sailors, a sort of float consisting of a number of poles or planks, firmly tied together along side of each other, to be conveyed to any distant place in a river, or to lade a ship. In several roads of the Baltic sea the floats of timber, or planks, are towed to the ships in this manner.

RAFT-PORT, a large square port, or hole, cut through the buttock of a ship, under the counter, to receive the planks, or timber, which comes aboard on the raft. They are drawn into the ship thus longitudinally, because they cannot be let down through the hatches on account of their extreme length.

RAFTERS, in building, pieces of timber, which standing by pairs on the

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reason or raising piece, meet in an angle at the top, and form the roof of a building. It is a rule in building, that no rafters should stand farther than twelve inches from one another. Principal rafters should be nearly as thick at the bottom as the beam, and should diminish in their length one fifth or one sixth of their breadth: the king-posts should be as thick as the principal rafters, and their breadth according to the bigness of them that are intended to be let into them, the middle part being left somewhat broader than the thickness.

RAG-BOLT, in ship-building, a long cylindrical pin of iron to drive through the plank into the timbers on particular occasions: the inward end of it is ragged, or full of little barbs, to prevent them from drawing back by the working of the ship.

RAGULED, or **RAGGED**, in heraldry, jagged or knotted. This term is applied to a cross formed of the trunks of two trees without their branches, of which they shew only the stumps.

RAJA, the title of the Indian black princes, the remains of those who ruled there before the moguls.

RAIL, in architecture, denotes those pieces of timber which lie horizontally between the pannels of wainscot. It is also applied to those pieces of timber which lie over and under ballusters in balconies, stair-cases, &c. as also from post to post in fences with pales or without.

RAILS, in ship-building, narrow planks, generally of fir, upon which there is a moulding struck. They are for ornament, and nailed across the stern above the wing transom, and counters, &c. They are likewise nailed upon several planks along the sides; one in particular is called the sheet-rail, which limits the height of the side from the fore-castle to the quarter-deck, and run aft to the stern, and forward to the cat-head. The wales are nearly parallel to this. *Murray's Ship-building.*

There are also other rails above the deck, ranging fore and aft, to prevent the men from falling over into the sea. Such are the fifth-rail, quarter-rails, stern and fore-castle rails. See *Quarter*.

RAIN, a watery meteor, which descends from the clouds in form of drops of water. Rain is apparently the precipitated vapours of watery clouds: thus, when various congeries of clouds are driven together by the agitation of the winds, they mix and run into one body, and

and by that means dissolve and condense each other into their former substance of water; also the coldness of the air is a great means to collect, compact, and condense clouds into water; which being heavier than the air, must of necessity fall through it in the form we call rain. Now the reason why it falls in drops, and not in whole quantities as it becomes condensed, is the resistance of the air, whereby, being broken and divided into smaller and smaller parts, the farther it passes through the air, it at last arrives to us in small drops. Mr. Derham accounts for the precipitation hence, that the vesicular being full of air, when they meet with a colder air than that they contain, their air is contracted into a less space; and, consequently, the watery shell rendered thicker, so as to become heavier than the air, &c. Others only allow the cold a part in the action, and bring in the winds as sharers with it. Indeed, it is plain, that a wind, blowing against a cloud, will drive its vesicular upon one another, by which means several of them coalescing, will be enabled to descend: and the effect will be still more considerable, if two opposite winds blow towards the same place. Add to this, that clouds already formed, happening to be aggravated by fresh accessions of vapour continually ascending, may thence be enabled to descend. According to Rohault, the great cause of rain is the heat of the air, which, after continuing for some time near the earth, is at length carried up on high by a wind, and there thawing the snowy villi, or flocks of the half-frozen vesicular, reduces them into drops; which coalescing, descend. Others, as Dr. Clarke, &c. ascribe this descent of the clouds rather to an alteration of the atmosphere than of the vesicular, and suppose it to arise from a diminution of the elastic force of the air. This elasticity, which depends chiefly or wholly on the terrene exhalations being weakened, the atmosphere sinks under its burden, and the clouds fall. Now the little vesicles, being once upon the descent, will persist therein, notwithstanding the increase of resistance they every moment meet with. For as they all tend toward the center of the earth, the farther they fall, the more coalitions will they make; and the more coalitions, the more matter will there be under the same surface; the surface only increasing as the squares, but the solidity as the cube; and the more

matter under the same surface, the less resistance there will be to the same matter. Thus, if the cold, wind, &c. act early enough to precipitate the ascending vesicles, before they are arrived at any considerable height, the coalitions being but few, the drops will be proportionably small, and thus is formed a dew. If the vapours be more copious, and rise a little higher, we have a mist or fog. A little higher still, and they produce a small rain, &c. If they neither meet with cold nor wind, they form a heavy, thick, dark sky. Hence, many of the phenomena of the weather may be accounted for: as, Why a cold summer is always a wet one, and a warm, a dry one? Why we have commonly most rain about the equinoxes? Why a settled, thick, close sky, scarce ever rains, till it has been first clear? As to the quantity of rain that falls, its proportion in several places at the same time, and in the same place at several times, we have plenty of observations, journals, &c. in the Memoirs of the French Academy, Philosophical Transactions, &c. There was so much rain in 1330, that the harvest did not begin till Michaelmas; in 1348 there was not one day or night dry together from Midsummer to Christmas.

RAINBOW, *Iris*, a meteor, in the form of a party-coloured semi-circle, exhibited in a rainy sky opposite to the sun, by the refraction of his rays in drops of falling rain. There is also a secondary bow, which is fainter, usually investing the former at some distance. The rainbow, Sir Isaac Newton observes, never appears but where it rains in the sunshine; and may be represented artificially, by contriving water to fall in little drops, like rain, through which the sun shining, exhibits a bow to a spectator placed between the sun and the drops; especially if a black cloth be disposed beyond the drops.

Lunar RAINBOW.—The moon sometimes also exhibits the phenomenon of an iris, by the refraction of her rays in drops of rain in the night-time. Aristotle says, he was the first that ever observed it, and adds that it is never visible, but at the time of full moon. The lunar iris has all the colours of the solar, only fainter. See Phil. Trans. N° 331.

Marine RAINBOW, the sea-bow, is a phenomenon sometimes observed in a much agitated sea, when the wind, sweeping part of the tops of the waves,

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carries them aloft: so that the rays of the sun are refracted, &c. as in a common shower.

Rohault mentions coloured rainbows on the grass, formed in the morning dew.

RAISER, in building, a board set on edge under the fore side of a step, stair, &c.

RAISING-PIECES, or REASON-PIECES, in architecture, pieces that lie under the beams, and over the posts or puncheons.

RAISING, in navigation, the heightening any distant object at sea, by approaching it, and levelling the intermediate space, the convexity of which intercepts the view. See the articles *Earth and Horizon*.

RAISING a Purchase, amongst sailors, the disposition of the machines, and component parts, in the proper order, to assist the motion of each other, and co-operate, to produce the effect required.

RAISINS, grapes which are suffered to remain on the vine till they are perfectly ripe, and then are dried in the sun, or by the heat of an oven. The difference between raisins dried in the sun, and those dried in ovens, is very obvious; the former are sweet and pleasant, but the latter have a latent acidity with the sweetness that renders them much less agreeable. The common way of drying grapes for raisins, is to tie two or three bunches of them together while they are on the vine, and dip them into a hot lixivium of wood-ashes, with a little of the oil of olives in it. This disposes them to shrink and wrinkle, and after this they are left on the vine three or four days separated on sticks in an horizontal situation, and then dried in the sun at leisure, after being cut from the tree. The finest and best raisins are those called in some places Damascus and Jube raisins: which are distinguished from the others by their size and figures: these are flat and wrinkled on the surface, soft and juicy within, and near an inch long, and when fresh and growing on the bunch, are of the size and shape of a large olive. The raisins of the sun, and jar-raisins, are all dried by the heat of the sun, and these are the sorts used in medicine. However, all the kinds have much the same virtues; they are all nutritive and balsamic: they are allowed to be attenuant, are said to be good in a phlegmatic complaints, and are an ingre-

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dient in pectoral decoctions, in which cases, as also in all others where astringency is not required of them, they should have the stones carefully taken out.

RAITING, or RATING, the laying of flax, hemp, timber, &c. when green, in a pond or running water, to season, and prepare it for future uses.

RAKE of a Ship, the projection of the stem and stern beyond the fore-mast and aft-mast ends of the keel. Thus, if a plumb-line were suspended over the stern, till it reaches as low as the keel, then would the distance between the after-end of the keel and the plummet be the rake.

The diagonal line reaching up from the keel to the top of the stern, comprehending her length in different heights, is also termed the rake: upon this the beauty of a ship considerably depends.

RAKING *fore and aft*, in the sea language, the act of cannonading a ship through either of the ends, by which the shot rake the whole length of her decks, and generally produce a great slaughter of the crew. This is the same operation with what is termed enfilade in the attack of defence or fortified places.

RAKING-TABLE, or RARED-TABLE, among architects, is a member hollowed in the square of a pedestal, &c.

* RALEIGH (Sir Walter), a celebrated admiral and learned writer, was the son of Walter Raleigh, Esq; and born at Budley, in Devonshire. In 1552, he was educated at Oriel college, Oxford, when he greatly distinguished himself by his genius; and having continued there three years, went as a volunteer into France in favour of the Protestants. After which, he went into the service of the prince of Orange against the Spaniards. He next attended Sir Humphry Gilbert, his half brother, in an expedition to the northern parts of America. In 1580, upon the descent of the Italian and Spanish forces into Ireland, he obtained a captain's commission, and distinguishing himself by his intrepidity in that kingdom, was made governor of Munster, and afterwards of Cork. In 1583, he engaged in a second expedition with Sir Humphry Gilbert, but after having been two or three days at sea, a contagious distemper seized his whole crew, which obliged him to return to port. The next year he obtained letters patent for the discovery

covery of unknown countries in America; and fitting out two barks at his own expence, reached the coast of Florida, sailed along the shore for about 120 miles, took possession of the country in the name of queen Elizabeth, and discovered the country of Wingandacoa, to which he gave the name of Virginia, in honour of that virgin queen; then returning to England, was chosen knight of the shire for the county of Devon, and the same session received the honour of knighthood. In 1585, Sir Walter was so intent upon planting his new colony of Virginia, that he sent out a fleet of seven sail, under the command of his cousin Sir Richard Greenville, who visited many Indian towns. Sir Richard, on his return, took a Spanish prize worth 50,000 l. and the same year, the rebellion in Ireland being totally suppressed, her majesty granted Sir Walter Raleigh 12000 acres of the forfeited lands, which great estate he planted at his own expence. Sir Walter, encouraged by this noble grant, fitted out a third fleet for Virginia, where the colony which had been left there, having suffered great distresses, had engaged Sir Francis Drake to take them with him to England. In 1586, Sir Walter was made seneschal of Cornwall and Exeter, and lord warden of the stannaries in Devonshire and Cornwall. The next year he prepared a new colony of 150 men for Virginia, which were left in that country. About this time he was advanced to the post of captain of her majesty's guard; and was one of the council of war appointed to consider of the most effectual methods for the security of the nation; but not confining himself to the office of giving advice, he raised and disciplined the militia of Cornwall, and having performed all possible services at land, joined the fleet with a squadron of volunteers, and had a considerable share in the total defeat of the Spanish Armada. In 1589, he accompanied Don Antonio, of Portugal, in the expedition to that kingdom, and in his return to England touched upon the coast of Ireland, where he visited Spencer the poet, whom he brought to England, and introduced to the queen's favour. Raleigh now formed a design of intercepting the Spanish plate fleet, and obtained a commission, with which he set sail with 15 vessels, did great damage to the Spaniards, and took a carrack, which was esteemed the richest prize ever brought to England: but in the height of Sir Walter's favour with the

queen, he fell under her majesty's displeasure: for, being in love with the daughter of Sir Nicholas Throgmorton, a maid of honour to the queen, and the consequence of the amour discovering the intrigue, her majesty ordered him to be confined for several months, and dismissed the lady from her attendance, to whom he afterwards made the most honourable reparation by marriage. Sir Walter now projecting the discovery of the extensive empire of Guiana in South America, set sail with a squadron of ships, attacked the Spaniards in the island of Trinidad, made himself master of the town of St. Joseph, and took the Spanish governor prisoner. He then sailed 400 miles up the river Oroonoke, but not being able to reach Guiana, reduced the town of Comana to ashes, and upon his return wrote an account of the discoveries he had made in this voyage. In 1596, he was appointed one of the chief commanders in the expedition to Cadiz; he was afterwards rear-admiral in the island-voyage, and in 1600 he was made vice-admiral. The same year he was sent on an embassy to Flanders, and was soon after made governor of the Isle of Jersey. Upon the accession of king James I he lost his credit at court, and was soon charged with being engaged in a plot to place the lady Arabella Stuart on the throne, and though there was no legal proof of his guilt, and the whole appeared an improbable fiction, he was condemned to lose his head, but being reprieved, was confined thirteen years in the Tower, during which he composed his History of the World, the first part of which was printed in 1614, and has been much admired. He finished the second part, but it was never published. Sir Walter Raleigh was in 1616 restored to liberty, and the next year received a commission from the king to sail to the coast of Guiana; but his design of obtaining a gold mine being betrayed to the Spaniards, it was defeated; when upon his return to England, king James, prompted by Gondemar, the Spanish ambassador, to his eternal infamy, ordered this great man to be beheaded on his former sentence, which was executed the 29th of October, 1618. This is considered as one of the basest actions recorded in the English history. Sir Walter Raleigh, besides the above work, wrote an Account of his Voyages to America, and several other pieces both in verse and prose.

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RALLYING, in war, re-assembling or calling together troops broken and put to flight.

RAM, in zoology, the male of the sheep kind. See *Sheep*.

RAM, in astronomy, the same with *aries*. See *Aries*.

Battering RAM, in antiquity, a military engine used to batter and beat down the walls of places besieged. See *Battering-Ram*.

RAMADAN, a solemn season of fasting among the Mahometans, kept in the ninth month of the Arabic year. This fast consists in abstaining from meat and drink, and from lying with their wives each day, from the rising of the sun till the stars appear; and is of such strict obligation, that none is excused from it; for the sick, and all others who cannot observe it in this month, are obliged to fast another entire month instead of it. So superstitious are the Mahometans in the observance of this lent, that they dare not wash their mouths or even swallow their spittle. The men are, indeed, allowed to bathe themselves, on condition they do not plunge the head under water, lest some drops enter by the mouth or ears, &c. but as for the women, they are strictly forbid bathing, for fear of taking in water at the pudendum. However, they frequently feast all night. The Mahometans call this month holy, and believe, that as long as it lasts, the gates of paradise are open, and those of hell shut.

* **RAMELLIES**, battle at. At the beginning of the campaign in the year 1706, the French king had resolved to make very considerable efforts; his armies were very formidable; that in Flanders was reinforced, so as to be in a condition to act offensively against the duke of Marlborough, for which its generals had orders. The duke, by the beginning of May, assembled his army between Borchloem, and Groes-Waren, and found it amounted to seventy-four battalions, and one hundred and twenty-three squadrons. The force of the enemy consisted of seventy-six battalions, and one hundred and thirty-two squadrons, when the French court was informed that the Danes and Prussians had not joined the confederates, and that now was the time to strike some decisive stroke before this junction was made. In this fond imagination, such positive orders were sent to the marshal de Villeroy, to fight the allies, that the duke of Bavaria,

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who was then at Brussels, had just time enough to take post-horses, to join the army, which passed the Deule, the nineteenth of May, and posted themselves at Tirlemont, with the Gheet before them. The confederates, on their side, were no less eager for an engagement; but could hardly flatter themselves with the hopes of having so early and so fair an opportunity for it. The duke of Marlborough being apprehensive, that the French would play the same game over again, and keep behind the Deule, as they had done the year before, had several times expressed his concern and uneasiness about it, to those who were intimate with him; and by a wise forecast, was laying schemes, to put the enemy beside their cautious measures, when providence threw into his hands an unexpected occasion of signalizing again his courage and conduct. Upon the enemy's passing the Deule, the duke of Marlborough sent orders to the Danish horse, who were coming from their garrison, to hasten their march; and that there might not be the least pretence of delay, he engaged his promise, with the field deputies of the states, that their arrears should be duly paid them. The duke of Witemberg, who commanded those troops, and was well-affected to the common cause, seeing every thing was complied with, that the king of Denmark insisted on, thought he needed not to stay, till he sent to that court, nor wait for express orders. He, therefore, commanded his troops to march, and they made such expedition, that the twenty-second of May, N. S. being the day before the battle, they came up within a league of the rear of the confederate army. About the same time, the French having been joined by the horse of the marshal de Marlin's army, and confiding in their superiority of number, came out of their lines, and encamped between Tirlemont and Judoigne. The next day, being Whitsunday, about four o'clock in the morning, the confederate army marched, in eight columns, towards Ramellies, a village near which the Gheet takes its source; that they might avoid the inconveniency of passing that river. They soon had information, that the enemy's army, having decamped from Tirlemont, was likewise on their march to meet them, their baggage and heavy canon being left at Judoigne. The duke of Bavaria, and the marshal de Villeroy, not in the least suspecting that the Danes had already joined the confederate

derate army, were fully bent upon engaging them, either that day, or the following; being apprehensive the duke of Marlborough had formed the design of investing Namur. Their immediate design was to possess themselves of Ramellies, and the strong camp thereabouts to prevent the confederates doing the same; and, in this they so far succeeded, that, being nearer, they got thither first; but had the mortification to be soon beat out of it again. The fears of the enemy, were, however, groundless, concerning Namur; for the duke of Marlborough had no such design. His resolution was the same with theirs, and had they not offered him battle that day, he would certainly have attacked them the next. The two armies met near the village of Ramellies, from whence the battle took its name. When the confederate army was advanced near this place, they found the enemy getting into the camp of mount St. André, and placing their right to the Mehaigne, where they had posted a brigade of foot, and filled the space between that and Ramellies, which is about half a league, an open and level ground, with near one hundred squadrons, among which were the troops of the French king's household. They had likewise above twenty battalions of foot, with a battery of about twelve pieces of cannon, at Ramellies. About one in the morning, the duke sent the quartermaster-general, with the camp colours, and a few squadrons, towards Ramellies, to make a feint, as if they designed to form a camp there, the better to penetrate into the enemy's designs; and, about three, his grace, and the marshal d'Auverquerque decamped, with the whole army, and advanced, in eight columns, in a great fog. A little after eight o'clock in the morning, the advanced guard of the confederates, which consisted of six hundred horse, and had been sent with all the quartermasters of the army, to view the ground, arrived at the height of Merdop, (or Merdan) from whence they perceived, that the enemy were in motion, and marched in the plain of Mont St. André, extending themselves as far as the tomb of Hottomont, towards the Mehaigne. Hereupon they halted, and sent intelligence to the duke of Marlborough, and Mons. d'Auverquerque, who being advanced about ten, to view the enemy, they could not at first judge, whether those squadrons they saw were only to cover their march into

their lines, or whether they were the van of the enemy, that came to offer them battle. His grace, therefore, gave orders to the horse to hasten their march, resolving, if those he saw had been only covering squadrons, to attack them with his cavalry only. But the fog being soon after dispersed, and the army being then in full view of the enemy, the duke found their whole army approach, with an apparent resolution to fight, upon which he made all the necessary dispositions to receive them. The enemy, seeing the confederates so near them, possessed themselves of a very strong camp, placing their right near the tomb of Hottomont, against the Mehaigne, and their left at Anderkirk, or Autreglise; and posted a good deal of their infantry in the villages of Autreglise, Osluz, and Ramellies, which last was near their centre; besides which, they put five battalions near the hedges of the village of Franquencies, which was on the right. The confederate army, was, at the same time, drawn up in order of battle, the right wing being posted near Foltz, on the rivulet Yause, with a little morass in front; and the left near the village of Franquencies on the Mehaigne; where, besides the number of the horse, belonging to that wing, the duke of Marlborough ordered the Danish squadrons, being twenty-one in number, to be posted; rightly judging, by the situation of the ground, that the stress of action would be on that side. All things being thus disposed, it was resolved to attack the village of Ramellies, which was the enemy's principal post; in which, as I have said before, they had posted twenty battalions, who had entrenched themselves, with a battery of about twelve pieces of treble cannon: and from thence to Autreglise they had formed a line of foot, along the Ghent, and a line of horse behind them. In order to this attack, twenty pieces of cannon of twenty-four pounders, and some hawbitzers, were brought up; and twelve battalions, who were to be supported by the whole line, were ordered to make the first onset, under the command of lieutenant-general Schultz. About half an hour past one, the artillery of the confederates began to play; it was immediately answered by the enemy's cannon, and both continued firing, with considerable execution: whilst the duke of Marlborough was at the head of the lines, to give the necessary orders every where, velt-Mar-

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RALLYING, in war, re-assembling or calling together troops broken and put to flight.

RAM, in zoology, the male of the sheep kind. See *Sheep*.

RAM, in astronomy, the same with aries. See *Aries*.

Battering RAM, in antiquity, a military engine used to batter and beat down the walls of places besieged. See *Battering-Ram*.

RAMADAN, a solemn season of fasting among the Mahometans, kept in the ninth month of the Arabic year. This fast consists in abstaining from meat and drink, and from lying with their wives each day, from the rising of the sun till the stars appear; and is of such strict obligation, that none is excused from it; for the sick, and all others who cannot observe it in this month, are obliged to fast another entire month instead of it. So superstitious are the Mahometans in the observance of this lent, that they dare not wash their mouths or even swallow their spittle. The men are, indeed, allowed to bathe themselves, on condition they do not plunge the head under water, lest some drops enter by the mouth or ears, &c. but as for the women, they are strictly forbid bathing, for fear of taking in water at the pudendum. However, they frequently feast all night. The Mahometans call this month holy, and believe, that as long as it lasts, the gates of paradise are open, and those of hell shut.

* **RAMFLIES**, battle at. At the beginning of the campaign in the year 1706, the French king had resolved to make very considerable efforts; his armies were very formidable; that in Flanders was reinforced, so as to be in a condition to act offensively against the duke of Marlborough, for which its generals had orders. The duke, by the beginning of May, assembled his army between Borchloem, and Groes-Waren, and found it amounted to seventy-four battalions, and one hundred and twenty-three squadrons. The force of the enemy consisted of seventy-six battalions, and one hundred and thirty-two squadrons, when the French court was informed that the Danes and Prussians had not joined the confederates, and that now was the time to strike some decisive stroke before this junction was made. In this fond imagination, such positive orders were sent to the marshal de Villeroy, to fight the allies, that the duke of Bavaria,

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who was then at Brussels, had just time enough to take post-horses, to join the army, which passed the Deule, the nineteenth of May, and posted themselves at Tirlemont, with the Gheet before them. The confederates, on their side, were no less eager for an engagement; but could hardly flatter themselves with the hopes of having so early and so fair an opportunity for it. The duke of Marlborough being apprehensive, that the French would play the same game over again, and keep behind the Deule, as they had done the year before, had several times expressed his concern and uneasiness about it, to those who were intimate with him; and by a wise forecast, was laying schemes, to put the enemy beside their cautious measures, when providence threw into his hands an unexpected occasion of signalizing again his courage and conduct. Upon the enemy's passing the Deule, the duke of Marlborough sent orders to the Danish horse, who were coming from their garrison, to hasten their march; and that there might not be the least pretence of delay, he engaged his promise, with the field deputies of the states, that their arrears should be duly paid them. The duke of Wirtemberg, who commanded those troops, and was well affected to the common cause, seeing every thing was complied with, that the king of Denmark insisted on, thought he needed not to stay, till he sent to that court, nor wait for express orders. He, therefore, commanded his troops to march, and they made such expedition, that the twenty-second of May, N. S. being the day before the battle, they came up within a league of the rear of the confederate army. About the same time, the French having been joined by the horse of the marshal de Marlin's army, and confiding in their superiority of number, came out of their lines, and encamped between Tirlemont and Judoigne. The next day, being Whitsunday, about four o'clock in the morning, the confederate army marched, in eight columns, towards Ramelies, a village near which the Gheet takes its source; that they might avoid the inconveniency of passing that river. They soon had information, that the enemy's army, having decamped from Tirlemont, was likewise on their march to meet them, their baggage and heavy cannon being left at Judoigne. The duke of Bavaria, and the marshal de Villeroy, not in the least suspecting that the Danes had already joined the confederate

derate army, were fully bent upon engaging them, either that day, or the following; being apprehensive the duke of Marlborough had formed the design of investing Namur. Their immediate design was to possess themselves of Ramellies, and the strong camp thereabouts to prevent the confederates doing the same; and, in this they so far succeeded, that, being nearer, they got thither first; but had the mortification to be soon beat out of it again. The fears of the enemy, were, however, groundless, concerning Namur; for the duke of Marlborough had no such design. His resolution was the same with theirs, and had they not offered him battle that day, he would certainly have attacked them the next. The two armies met near the village of Ramellies, from whence the battle took its name. When the confederate army was advanced near this place, they found the enemy getting into the camp of mount St. André, and placing their right to the Meuse, where they had posted a brigade of foot, and filled the space between that and Ramellies, which is about half a league, an open and level ground, with near one hundred squadrons, among which were the troops of the French king's household. They had likewise above twenty battalions of foot, with a battery of about twelve pieces of cannon, at Ramellies. About one in the morning, the duke sent the quartermaster-general, with the camp colours, and a few squadrons, towards Ramellies, to make a feint, as if they designed to form a camp there, the better to penetrate into the enemy's designs; and, about three, his grace, and the marshal d'Auverquerque decamped, with the whole army, and advanced, in eight columns, in a great fog. A little after eight o'clock in the morning, the advanced guard of the confederates, which consisted of six hundred horse, and had been sent with all the quartermasters of the army, to view the ground, arrived at the height of Merdop, (or Merdan) from whence they perceived, that the enemy were in motion, and marched in the plain of Mont St. André, extending themselves as far as the tomb of Hottomont, towards the Meuse. Hereupon they halted, and sent intelligence to the duke of Marlborough, and Mons. d'Auverquerque, who being advanced about ten, to view the enemy, they could not at first judge, whether those squadrons they saw were only to cover their march into

their lines, or whether they were the van of the enemy, that came to offer them battle. His grace, therefore, gave orders to the horse to hasten their march, resolving, if those he saw had been only covering squadrons, to attack them with his cavalry only. But the fog being soon after dispersed, and the army being then in full view of the enemy, the duke found their whole army approach, with an apparent resolution to fight, upon which he made all the necessary dispositions to receive them. The enemy, seeing the confederates so near them, possessed themselves of a very strong camp, placing their right near the tomb of Hottomont, against the Meuse, and their left at Anderkirk, or Autreglise; and posted a good deal of their infantry in the villages of Autreglise, Olluz, and Ramellies, which last was near their centre; besides which, they put five battalions near the hedges of the village of Franquennes, which was on the right. The confederate army, was, at the same time, drawn up in order of battle, the right wing being posted near Foltz, on the rivulet Yause, with a little morass in front; and the left near the village of Franquennes on the Meuse; where, besides the number of the horse, belonging to that wing, the duke of Marlborough ordered the Danish squadrons, being twenty-one in number, to be posted; rightly judging, by the situation of the ground, that the stress of action would be on that side. All things being thus disposed, it was resolved to attack the village of Ramellies, which was the enemy's principal post; in which, as I have said before, they had posted twenty battalions, who had entrenched themselves, with a battery of about twelve pieces of treble cannon: and from thence to Autreglise they had formed a line of foot, along the Ghent, and a line of horse behind them. In order to this attack, twenty pieces of cannon of twenty-four pounders, and some hawbitzers, were brought up; and twelve battalions, who were to be supported by the whole line, were ordered to make the first onset, under the command of lieutenant-general Schultz. About half an hour past one, the artillery of the confederates began to play; it was immediately answered by the enemy's cannon, and both continued firing, with considerable execution: whilst the duke of Marlborough was at the head of the lines, to give the necessary orders every where, viz. Mar-

shal Auverquerque repaired to the left, where, perceiving that the enemy's foot, posted in the hedges of Franquénies, galled the horse of that wing, he commanded four battalions, with two pieces of cannon, under colonel Wertmuller, to dislodge them from thence, which they performed, with great vigour and resolution. Hereupon the enemy detached two battalions, and fourteen squadrons of dragoons, on foot, to regain that important post; but Monf. d'Auverquerque commanded at the same time the whole wing of the Dutch horse to attack the enemy, which not only prevented their design, but put those dragoons into such disorder, that they were not able either to reach the village, or recover their horses, which they had left a great way behind the tomb of Hottomont; and so were, most of them, cut in pieces, and taken prisoners. The Dutch cavalry charged with a great deal of bravery, sword in hand, and soon after the engagement was sustained by the Danish squadrons; but having to deal with the French king's household, viz. the mousquetaires, gendarmes, gardes de corps, horse grenadiers, and other choice troops, which were in the enemy's right, the conflict was obstinate, and the success doubtful, for above an hour. The Danish horse, which fought on the left of all, behaved themselves with such gallantry, that they forced the enemy to give ground, and broke several of their squadrons; but, at the same time, the French had almost an equal advantage against the Dutch horse of the right of the left wing, whom they put into great confusion. To remedy this, the duke of Marlborough, who was advanced that way, sent for twenty squadrons of horse from the right wing, where they could not engage the enemy's left, by reason of a morass which separated them: and with these he reinforced his left, adding to them his body of reserve. French writers, who have given a description of this battle, allow of this as a very prudent part of the duke of Marlborough's conduct; but to cover the disgrace of their favourite troops, pretend his grace sent for fifty, and not twenty squadrons, from his right, and made four lines of them, besides a column composed of his body of reserve. "Thus (says F. Daniel) the whole weight of the battle fell upon the right wing of the French army, where the troops of his majesty's household were placed. This body (con-

times he) which had hitherto been invincible (he forgets Blenheim) entered the enemy's troops, and overthrew the three first lines; but finding a fourth, and the column above-mentioned, besides, which was moving to fall upon them in the flank, they were obliged to give way;" and just in the same strait the marquis de Quincy argues: but to proceed. The duke of Marlborough, while these troops were advancing from the right, rallied some of the broken squadrons, and gave his orders for others to charge: in this place his grace was in the extremity of danger; for being singled out by several of the most resolute of the enemy, and having the misfortune, as he was leaping a ditch, to fall from his horse, he had either been killed or taken prisoner, if some of the confederate foot, that were near at hand, had not come very seasonably to his assistance. After this, his grace had still a narrower escape, a cannon ball taking off the head of colonel Briendfield, his grace's gentleman of the horse, as he was holding the stirrup for the duke to remount. The twenty squadrons his grace had sent for from the right, to reinforce the left, had but little share in the defeat of the enemies right: for by that time they were come up, the Dutch and Danes having charged them both in front and flank, had almost completed that signal piece of service, cutting in pieces the best part of the French king's household; inasmuch that they could never be fully re-established during the remainder of the war. In the mean time, the village of Ramellies was vigorously attacked by general Schultz, with the twelve battalions under him. The enemy, having the advantage of the ground, defended themselves with great resolution and obstinacy, till seeing the whole line of the confederate foot in motion to support general Schultz, and the Dutch and Danish horse advancing to surround them, they bethought themselves of making their retreat; but found it was too late: for they were intercepted by the victorious horse, and most of them either killed, or taken prisoners. The rest of the enemy's infantry endeavoured, likewise, to make their escape, which they did in better order, being favoured by the horse of their left wing, who being covered by a rivulet and morass, had not yet been attacked, and formed themselves in three lines, between Osluz and Autreglise. But the English horse having found

found means to pass the rivulet, charged the enemy with such unparalled briskness and courage, that they entirely abandoned their foot; and our dragoons, pushing into the village of Autreglise, made a terrible slaughter of them. The rest of the enemy, who were, at the same time, attacked by the English and Dutch foot, with equal bravery, gave way on all sides. Their horse rallied again in the plains, to cover the disorderly retreat of their foot; but they were so closely pursued by the confederate cavalry, that they were forced to divide themselves into three small bodies, that they might fly the better, three different ways. Those that took to the left, were pursued by the Dutch and Danes, who made great slaughter amongst them, and took abundance of prisoners: and those that fled to the right, were chased by the regiments of Lumley, Hay, and Ross; which two last fell in with the foot regiment du Roy, of whom having killed many, the rest threw down their arms and begged quarter, which was generously granted. Upon this, they delivered their arms and colours to the lord John Hay's dragoons: but when these dragoons faced about, in order to pursue the enemy, they treacherously attempted to take up their arms again; in which, however, they were prevented, and suffered severely for their perfidy. The headmost regiments of the English horse, that pursued the enemy's center, were that of lieutenant-general Wood, commanded by himself, and Wyndham's (afterwards Palm's) carabineers, headed by major Petry. When they came upon a rising ground, they espied seven squadrons of the Spanish and Bavarian guards, among which was the elector himself, and the marshal de Villeroy, who hoped, with these few choice troops, to make good their retreat, and save their cannon, which was marching in a line before them. General Wood galloped with his own regiment upon the enemy's left, and charged them so vigorously, that he broke them all to pieces, killing many of them, and taking not a few prisoners, among whom were two lieutenant-colonels, one major, four captains, and several subaltern officers. He also took the standard of the elector's guards, two of his own trumpets, and killed his kettle-drummer: the elector himself and the marshal de Villeroy very narrowly escaping. Major Petry, at the head of Wyndham's carabineers, fell upon the enemy with equal briskness and

resolution; put many of them to the sword, and took several prisoners, particularly the major of the Spanish guards, mons. de la Guertiere, and mons. de Bruan, cornet of the same; besides four officers, and forty-six private men, of the royal bombardiers, with their colours. The English horse and dragoons followed the chase through and by Judoigne, till two of the clock in the morning, as far as Meldert, being five leagues from the place where the action happened, and two from Louvain. During this retreat, a misfortune happened to the enemy, which contributed not a little to compleat the victory. Several wagons of their van-guard, breaking down, stopped the way, so that their baggage and artillery, which followed, could not pass; nor could their troops desfile in good order: perceiving that the confederate horse, having got intelligence of this accident, pursued them close, they threw down their arms, that they might escape with the greater ease, and retreated without any order, and in the greatest confusion. Here it was that the most prisoners were taken; for in the action little or no quarter was given, the confederate horse having been highly provoked by the idle gasconades of the French musqueteers and gens d'arms, of which they were very full when they came to the attack, but paid dearly for it in the sequel. In short, never was victory more compleat; the confederates made themselves masters of all the enemy's cannon, excepting two or three, to the number of about fifty pieces; most of their baggage; about one hundred and twenty colours or standards, and several pair of kettle-drums. The enemy's loss of men, according to the most general computation, amounted to eight thousand slain, and among them, prince Maximilian and prince Monbason; and about six thousand private soldiers, and near six hundred officers taken prisoners; which, with their deserters and wounded, made their loss not less than twenty thousand men. Some accounts make the number of deserters so great, to aver, that hardly half of their troops ever returned to their colours. The persons of note among the prisoners, were messieurs Palavicini and Miziere, major-generals; the marquis de Bar, brigadier-general of horse; the marquis de Nonan, brigadier-general of foot; the marquis de la Baume, son of the marshal de Tallard; monsieur de Montmorency, nephew to the late duke of

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of Luxemburg, a nephew of the lord Clare, and several others.

RAMIFICATION, the production of boughs or branches, or of figures resembling branches.

RAMMER, an instrument used for driving down stones or piles into the ground; or for beating the earth, in order to render it more solid for a foundation.

RAMMER of a Gun, the gun-slick; a rod used in charging a gun, to drive home the powder, as also the shot and wad, which keeps the shot from rolling out. The rammer of a great gun is used for the same purpose. It has a round piece of wood at one end, and the other is usually rolled in a piece of sheep-skin, fitted to the bore of the piece, and is used to clear her after she has been discharged, which is called spunging the piece.

RAMPANT, in heraldry, a term applied to a lion, leopard, or other beast that stands on his hind-legs, and rears up his fore-feet in the posture of climbing; shewing only half his face, as one eye, &c. It is different from salient, in which the beast seems springing forward as if making a fall.

RAMPART, in fortification, an elevation of earth round a place; capable of resisting the cannon of an enemy; and formed into bastions, curtains, &c. A rampart ought to be sloped on both sides, and to be broad enough to allow room for the marching of waggons and cannon, beside that allowed for the parapet which is raised on it: its thickness is generally about ten or twelve fathom, and its height not above three, which is sufficient to cover the houses from the battery of the cannon. The rampart is encompassed with a ditch, and is sometimes lined or fortified on the inside, otherwise it has a berm. Upon the rampart soldiers continually keep guard, and pieces of artillery are planted there for the defence of the place.

RAMPART, in civil architecture, is used for the space left between the wall of a city and the next houses.

RAMPION, *Rapuntium*, in botany, a genus of plants, the flower of which consists of one leaf, which is of an anomalous figure, hollowed like a pipe, and furrowed or channelled; divided, as it were, into many parts, in the shape of a tongue, defended by a vagina or covering, which infolds the point: when the flowers decay, the flower-cup turns to a fruit di-

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vided into three cells, full of small seeds, which adhere to a placenta, which is divided into three parts. The crimson *rapuntium* is greatly prized by the curious, for the beauty of its rich crimson flowers, which exceed all the flowers I have yet seen, in the deepness of its colour: and these commonly, when their roots are strong, produce large spikes of these flowers, which continue a long time in beauty, and make a most magnificent shew amongst other flowers. The time of their flowering is commonly in July and August; and if the autumn proves very favourable, they will sometimes produce good seeds in England. These plants are natives of Virginia and Carolina, where they grow by the sides of rivulets, and make a most beautiful appearance; from whence the seeds are often sent into England. These seeds commonly arrive here in the spring; at which time they should be sown in pots filled with light earth, and but just covered over; for if the seeds are buried deep, they will not grow. These pots should be placed under a frame, to defend them from cold, until the season is a little advanced; but they should not be placed on an hot-bed, which will also destroy the seeds. When the weather is warm, towards the middle of April, these pots should be placed in the open air, in a situation where they may have the morning sun till twelve o'clock, observing to water them constantly in dry weather; and, when the plants are come up, and are grown pretty strong, they should be transplanted each into a small pot filled with fresh light earth, and placed in the same situation, observing to water them in dry weather; and, in winter, they should be placed under an hot-bed-frame, where they may be sheltered from severe frosts; but, in mild weather, they should be as much exposed to the open air as possible. The March following these plants should be put into larger pots filled with the same fresh earth, and placed, as before, to the morning sun; observing to water them in dry weather, which will cause them to flower strong the autumn following. These plants are also propagated by parting of their roots: the best season for which is, either soon after they are past flower, or in March; observing to water and manage them as hath been directed for the seedling plants, both in winter and summer. *Miller's Gard. Dict.*

RANCID denotes a fatty substance that

that is become rank or musty; or has contracted an ill smell by being kept close.

RANDOM SHOT, in gunnery, a shot made when the muzzle of a gun is raised above the horizontal line, and is not designed to shoot directly, or point blank. The utmost random of any piece is about ten times as far as the bullet will go point blank. The bullet will go farthest when the piece is mounted to about 45° above the level range. See *Gunnery*.

RANGE of the Cable, amongst sailors, a sufficient length of it drawn upon deck before the anchor is cast off, to let it sink into the ground without being interrupted by the cable; accordingly the length of this range ought to be equal to the depth of the water where the anchor is to be sunk to ride the ship.

RANGE, in gunnery, the path of a bullet, or the line it describes from the mouth of the piece to the point where it lodges. If the piece lies in a line parallel to the horizon, it is called the right or level range: if it be mounted to 45° , it is said to have the utmost range: all others between 00 and 45° are called the intermediate ranges.

RANGER, a sworn officer of a forest, appointed by the king's letters-patent, whose business is to walk through his charge, to drive back the deer out of the pursues &c. and to prevent all trespasses within his jurisdiction at the next forest-court.

RANGING, in building, signifies running straight, when the sides of a work do not break into angles.

RANK, the order or place allotted a person suitable to his quality or merit.

RANSOM, a sum of money paid for the redemption of a slave; or for the liberty of a prisoner of war. In our law-books ransom is also used for a sum paid for the pardon of some great offence, and to obtain the offender's liberty.

RANT, in the drama, an extravagant, unnatural, and improbable flight of passion.

RANULA, or **RANA**, in medicine, a tumour under the tongue, which like a ligature hinders a child from speaking or sucking.

RANUNCULUS, in botany, a genus of plants, the flower of which consists of several leaves, which are placed in a circular order, and expanded in form of a rose; having, for the most part, a many-leaved empalement or flower-cup; out of

the middle of the flower rises the pointal, which afterwards becomes a fruit, either round, cylindrical, or spiked; to the axis of which as a placenta, adhere many seeds, for the most part naked.

There are a great variety of species of ranunculus; but that called the Persian ranunculus being universally admired, we shall only give the method of cultivating that beautiful flower.

The beds in which the Persian ranunculus roots are planted, should be made with fresh light sandy earth, at least three feet deep; the best soil for them may be composed in this manner, viz take a quantity of fresh earth from a rich upland pasture, about six inches deep, together with the green sward: this should be laid in an heap to rot, for twelve months before it is mixed, observing to turn it over very often, to sweeten it, and break the clods: to this you should add a fourth part of very rotten neat's dung, and a proportionable quantity of sea or drift sand, according as the earth is lighter or stiffer; if it be light, and inclining to a sand, there should be no sand added; but if it be an hazel loam, one load of sand will be sufficient for eight loads of earth; but if the earth is strong and heavy, the sand should be added in a greater proportion: this should be mixed six or eight months before it is used; and you should often turn it over, in order to unite their parts well together, before it is put into the beds.

The depth which this should be laid in the beds, must be about three feet; this should be below the surface, in proportion to the dryness or moisture of the place where they are situated; which, in dry ground, should be two feet eight inches below the surface, and the beds raised four inches above; but in a moist place they should be two feet four inches below, and eight above the ground; and, in this case, it will be very proper to lay some rubbish and stones at the bottom of each bed, to drain off the moisture; and if, upon this, at the bottom of the beds, some very rotten neat's dung is laid two or three inches thick, the roots will reach this in the spring, and the flowers will be the fairer. This earth I would by no means advise to be screened very fine: only, in turning it over each time, you should be careful to break the clods, and throw out all large stones, which will be sufficient; for it is made very fine, when the great rains in winter come on, it will cause the earth to bind into one solid lump,

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lump, whereby the moisture will be detained, and the roots, not being able to extend their tender fibres, will rot.

The beds, being thus prepared, should lie a fortnight to settle, before the roots are planted, that there may be no danger of the earth settling unequally after they are planted; which would prejudice the roots, by having hollow places in some parts of the bed, to which the water would run and lodge, and so rot the roots in such places. Then having levelled the earth, laying the surface a little rounding, you should mark out the rows by a line, at about six inches distance each way, so that roots may be planted every way in straight lines; then you should open the earth with your fingers at each cross, where the roots are to be planted, about two inches deep; placing the roots exactly in the middle, with their crowns upright; then with the head of a rake, you should draw the earth upon the surface of the bed level, whereby the top of the roots will be about an inch covered with earth, which will be sufficient at first. This work should be done in dry weather, because the earth will then work better than if it were wet; but the sooner after planting there happens to be rain, the better it will be for the roots, for if it should prove dry weather long after, and the earth of the beds be very dry, the roots will be subject to mould and decay; therefore, in such a case, it will be proper to give a little water to the beds, if there should no rain happen in a fortnight's time, which is very rare at that season of the year, so that they will seldom be in danger of suffering that way.

When the roots are thus planted, there will no more be required until towards the end of November; by which time they will begin to heave the ground, and their beds appear; when you should lay a little of the same fresh earth, of which the beds were composed, about half an inch thick all over the beds, which will greatly defend the crown of the root from frost: and when you perceive the buds to break through this second covering, if it should prove very hard frost, it will be very proper to arch the beds over with hoops, and cover them with mats, especially in the spring, when the flower-buds will begin to appear; for if they are exposed to too much frost, or blighting winds, at that season, their flowers seldom open fairly, and many times their roots are destroyed: but this happens

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more frequently to the Persian kinds, which are tenderer, than to those sorts which are pretty hardy; for which reason they are commonly planted in open borders, intermixed with other flowers, though in very hard winters these are apt to suffer, where care is not taken to guard off the frost.

In the beginning of March the flower stems will begin to rise, at which time you should carefully clear the beds from weeds, and stir the earth with your fingers between the roots, being very careful not to injure them; this will not only make the beds appear handsome, but also greatly strengthen their flowers. When the flowers are past, and the leaves are withered, you should take up the roots, and carefully clear them from the earth; then spread them upon a mat to dry, in a shady place; after which they may be put up in bags or boxes, in a dry room, until the October following, which is the season for planting them again.

RANULARES, or **RANINE VEINS**, in anatomy, two veins under the apex of the tongue, which arise from the internal jugular, and run on either side the linea mediana. See *Tongue*.

RAPACIOUS ANIMALS, are such as live upon prey.

RAPE, in law, the having carnal knowledge of a woman by force and against her will. The civilians make another kind of rape, called rape of subornation or seduction; which is seducing a maid either to uncleanness or marriage; and that by gentle means, provided there be a considerable disparity in the age and circumstances of the parties.

RAPE of the Forest, a trespass committed in a forest by violence.

RAPE, a name given to a division of a county, and sometimes means the same as a hundred, and at other times signifies a division consisting of several hundreds; thus Sussex is divided into six rapes, every one of which, besides its hundreds, has a castle, a river, and forest belonging to it. The like parts in other counties are called tithings, laths, or wapentakes.

RAPE also signifies the stalks of the clusters of grapes when dried and freed from the fruit. This is used in making vinegar.

* **RAPHAEL**, (D'URBINO) the most excellent painter that has appeared since the revival of the fine arts, was the son of a painter named Sanzio, and was born at Urbino, on Good Friday, 1483. The popes

papes Julius II. and Leo X. who employed him, loaded him with wealth and honour, and it is said that cardinal de St. Bibiana had such an esteem for him, that he offered him his niece in marriage. Peter Perugino was his master, but he soon surpassed him, and endeavoured to improve by copying the works of Leonardo da Vinci, and Michael Angelo. His genius is admired in all his pictures; his contours are free, his ordinances magnificent, his designs correct, his figures elegant, his expressions lively, his attitudes natural, his heads graceful: in fine, every thing is beautiful, grand, sublime, just, and adorned with graces. His pictures are principally to be found in Italy and Paris. That of the transfiguration preserved at Rome in the church of St. Peter Monterio, passes for his master-piece. His designs are not so scarce as his pictures. He had a handsome person, was well proportioned, had great sweetness of temper, and was polite, affable, and modest. He, however, lived in the utmost splendor; most of the eminent masters of his time were ambitious of working under him; and he never went out without a croud of artists and others, who followed him purely through respect. He was not only the best painter in the world, but, perhaps, the best architect too, on which account Leo X. charged him with building St. Peter's church at Rome. He was too much addicted to pleasure, which occasioned the disease of which he died at Rome, on Good Friday, 1520, aged 37. He left a great number of disciples, among which were Julio Romano, and John Francis Penni, who were his heirs.

RAPIER formerly signified a long, old fashioned broad sword, such as those worn by the common soldiers: but it now denotes a small sword, such as is contradistinguished from a back-sword.

RAPINE, in law, taking away another's goods, &c. openly and by violence.

RAPTURE, an extasy or transport of mind. See *Extasy*, *Enthusiasm*, &c.

RAREFACTION, in physics, the act whereby a body is rendered rare; that is, brought to possess more room, or appear under a larger bulk, without accession of any new matter. Rarefaction is most properly restrained to that expansion of a mass into a larger bulk, which is effected by heat. All expansion from other causes they call dilatation. It is by rarefaction that gunpowder has its effect; and to the

same principle also we owe our æolipiles, thermometers, &c. The degree to which the air is rarefiable, exceeds all imagination; such is the rarefaction of common air from its own principle of elasticity, and without any previous condensation, that Mr. Boyle found it to dilate itself so as to take up 13679 times its former space; and when compressed, the same author found its greatest space when most rarified, to its least when most condensed, as 530000 to 1.

The open air, in which we breathe, says Sir Isaac Newton, is 8 or 900 times lighter than water, and by consequence 8 or 900 times rarer. And since the air is compressed by the weight of the incumbent atmosphere, and the density of the air is proportionable to the compressing force, it follows by computation, that at the height of about seven English miles from the earth, the air is four times rarer than at the surface of the earth; and at the height of 14 miles, it is 16 times rarer than at the surface of the earth; and at the height of 21, 28, or 35 miles, it is respectively 64, 256, or 1024 times rarer, or thereabouts; and at the height of 70, 140, and 210 miles, it is about 1000000, 1000000000000, or 100000000000000000, &c.

RASANT, or **RAZANT**, in fortification. Rasant-flank, or line, is that part of the curtain or flank whence the shot exploded raze or glance, along the surface of the opposite bastion.

RASH, in medicine, an eruption upon the skin, thrown out in fevers or surfeits.

RASPBERRY, a species of bramble growing naturally wild in the woods in the northern parts of England, but is cultivated in gardens for its fruit, which supplies the table at the season when they are ripe. There are two or three varieties of this, one with a red and the other a white fruit, and the third generally produces two crops of fruit annually; the first ripens in July, and the second in October, but those of the latter season have seldom much flavour. The raspberry is generally propagated by suckers, though such plants are to be preferred as are raised by layers, because they will be better rooted, and not so liable to send out suckers as the other, which generally produce such quantities of suckers from their roots, as to fill the ground in a year or two; and where they are not carefully taken off, or thinned, will cause the fruit to be small, and in less quantities, especially when the plants are placed near

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each other, which is too often the case, for there are few persons who allow these plants sufficient room.

RAT, in zoology, the English name of several species of the mus-kind; as the common rat, the ground-rat, and the water-rat. The common rat is a quadruped too well known to need much description. It is of a brownish-grey colour, with a long and almost naked tail. It greatly resembles the common mouse in form, but it is at least five times as large: the tail is divided into more than an hundred and fifty annular joints.

The ground-rat is nearly of the size of the common rat, except that its tail is much shorter, as well as more hairy.

The water-rat is considerably larger than the common kind: its tail is all the way of the same thickness, and is abrupt at the end: its legs are shorter than those of the common rat, but its feet are longer, and the toes connected by membranes.

RATAFIA, a fine spirituous liquor, prepared from the kernels, &c. of several kinds of fruit, particularly of cherries and apricots. Ratafia of cherries is prepared by bruising the cherries, and putting them into a vessel wherein brandy has been long kept; then adding to them the kernel of cherries, with strawberries, sugar, cinnamon, white-pepper, nutmegs, cloves; and to twenty pound of cherries, ten quarts of brandy. The vessel is left open ten or twelve days, and then stopp'd close for two months before it be tapp'd. Ratafia of apricots is prepared two ways, viz. either by boiling the apricots in white wine, adding to the liquor an equal quantity of brandy with sugar, cinnamon, mace, and the kernels of apricots; infusing the whole for eight or ten days; then straining the liquor, and putting it up for use: or else by infusing the apricots cut in pieces in brandy, for a day or two, passing it through a straining bag, and then putting in the usual ingredients.

RATCH, or **RASH**, in clock-work, a sort of wheel having twelve fangs, which serve to lift up the detents every hour, and make the clock strike. See *Clock*.

RATCHETS, in a watch, the small teeth at the bottom of the fusee, or barrel, which stops it in winding up.

RATE, a standard or proportion, by which either the quantity or value of a thing is adjusted.

RATE, in the royal navy, the degree, or order, into which vessels of war are

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usually classed: of these there are six, besides sloops, armed ships, bomb vessels, fire-ships, &c. The first comprehends the ships of 110 and 101 pieces of cannon: the second, those which carry 90: the third, those from 84 to 64: the fourth, those of 60 and 50: the fifth, those of 40, 36, and 32; and lastly, the sixth, those of 28, 24, and 20. All these are commanded by captains; those of the sloops, armed ships, &c. by an officer styled the master and commander.

RATE-TYTHE, when sheep or other cattle are kept in a parish for less time than a year the owner must pay tythe for them, *pro rata*, according to the custom of the place.

RATEEN, or **RATTEN**, in commerce, a thick woollen stuff, quilted, woven on a loom with four treadles like serges, and other stuffs, that have the whale or quilling. There are some rateens dressed and prepared like cloths; others left simply in the hairy; and others where the hair or knap is frized. Rateens are chiefly manufactured in France, Holland, and Italy, and are mostly used in linings. The frize is a sort of coarse rateen, and the druggat is a rateen half linen, half woollen.

RATIFICATION, an act approving of and confirming something done by another in our name.

RATIFICATION is also used for an act confirming something we ourselves have done in our name.

RATIO, or **REASON**, in arithmetic and geometry, is that relation of homogeneous things which determines the quantity of one from the quantity of another, without the intervention of a third.

Two numbers, lines, or quantities, A and B, being propos'd, their relation one to another may be considered under one of these two heads:

1. How much A exceeds B, or B exceeds A; and this is found by taking A from B, or B from A, and is called arithmetic reason or ratio.

2. Or how many times, as parts of a time, A contains B, or B contains A; and this is called geometric reason or ratio; (or, as Euclid defines it, it is the mutual habitude, or respect, of two magnitudes of the same kind, according to quantity; that is, as to how often the one contains, or is contained, in the other) and is found by dividing A by B, or B by A; and here note, that that quantity which is referred to another quantity, is called the antecedent of the ratio;

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ratio; and that to which the other is referred, is called the consequent of the ratio; as, in the ratio of A to B, A is the antecedent, and B the consequent.

3. Therefore any quantity, as antecedent, divided by any quantity as a consequent, gives the ratio of that antecedent to the consequent.

Thus the ratio of A to B is $\frac{A}{B}$, but the ratio of B to A is $\frac{B}{A}$; and, in numbers, the ratio of 12 to 4 is $\frac{12}{4} = 3$, or triple; but the ratio of 4 to 12 is $\frac{4}{12} = \frac{1}{3}$, or subtriple.

4. And here note, that the quantities, thus compared, must be of the same kind; that is, such, which, by multiplication, may be made to exceed one the other, or as these quantities are said to have a ratio between them, which, being multiplied, may be made to exceed one another. Thus a line, how short soever, may be multiplied, that is, produced so long as to exceed in length any given right line, and consequently these may be compared together, and the ratio expressed; but as a line can never, by any multiplication whatever, be made to have breadth, that is, to be made equal to a superficies, how small soever; these can therefore never be compared together, and consequently have no ratio or respect one to another, according to quantity; that is, as to how often the one contains, or is contained in the other. See *Proportion*.

RATIOCINATION, the act of reasoning.

RATIONAL, REASONABLE. See *Reason*.

RATIONAL is also applied to integral, fractional, and mixed numbers: thus we say rational fraction, rational integer, and rational mixed number, for the explanation and doctrine of which, see *Number* and *Fraction*.

RATIONAL is applied to the true horizon, in opposition to the sensible or apparent one. See *Horizon*.

RATIONAL is also applied to quantity, ratio, &c. See *Quantity, Ratio, &c*.

RATIONALE, a solution, or account of the principles of some opinion, action, hypothesis, phenomenon, or the like.

RATIONIS OS, in anatomy, a term so etimes used for the os frontis. See the article *Frontis Os*.

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RATTLE-SNAKE, in natural history, a very dreadful species of serpents, whose bite is fatal, if not timely remedied, and which is distinguished from all other serpents by the rattle in its tail. This is composed of several scaly substances, and is said to increase by the creature's age, every year adding one scale to it. It moves over the rocks and mountains with prodigious swiftness; but is less nimble on even ground than many other snakes. It grows to four or five feet long, and sometimes, though rarely, to more.

The charming or fascination of the rattle-snake, as this is usually called, has exercised the wits of many naturalists in vain, and many have disbelieved the fact. Sir Hans Sloane mitigates the matter, by supposing the creature first to seize or bite its prey, which it then suffers to escape, as far as the poison will let it, watching its death, that it may devour it without trouble; and that it is in this poisoned state that people have seen the squirrels, &c. dancing about before the rattle-snake, and dying convulsed: all which they have attributed to the power of charming in the eye of the snake, not conceiving that it was the effect of the creatures having before bit them. This, though a very plausible account, yet, however, wants experience to confirm it, and the general testimony of people, who have seen the facts, makes against it.

RATTLE-SNAKE-ROOT, in botany, a plant with oblong, somewhat oval, pointed leaves; upright unbranched stalks; white flowers; and a variously bent and divaricated jointed root, about the thickness of the little finger, with a membranous margin running its whole length on each side, externally of a yellowish or pale-brownish colour, internally white. It is a native of Virginia, Pennsylvania, and Maryland, and cultivated in some of our gardens.

RATTLINGS, in the sea language, pieces of small cord tied horizontally from shroud to shroud to form the steps, like those of a ladder, by which the sailors climb to the mast-head, to perform the necessary business aloft. All the shrouds of a ship are rattled, except those of the top-gallant-masts; and in Dutch vessels they are also furnished with rattlings.

RAVAILLAC, (FRANCIS) was the assassin of Henry IV. king of France. He was born at Angouleme, and was the son of a practitioner in the law. He had some time followed the same profession, but afterwards took the habit of the Feuillans, an order of begging friars of the order

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order of St. Barnard, but was driven from amongst them during his noviciate, on account of his gloomy ideas, visions, and extravagancies. Some time after he was accused of a murder, and thrown into prison, but not being convicted of the crime, he was released, and returned to the employment of a solicitor; but losing a cause which he tried for himself, in order to recover an estate, he was reduced to poverty, and then became master of a school at Angoulême. He was a man of a melancholy disposition, whose imaginations had been disordered in his youth, by the libels and sermons of the leaguers, which inspired him with a violent aversion to Henry IV. and this, with the abominable opinion, that it is permitted to kill all who put in danger the catholic religion, or make war on the pope, had such an effect, that he could not bear the name of a Huguenot without being in a fury. The necessity to which he was reduced, joined to his melancholy reflections, induced him to take the execrable resolution of assassinating the king, whom his heated imagination made him consider as an unjust tyrant, who was going to make war on the pope, and took no care to convert the Huguenots. Having confirmed himself in this resolution, he prepared for its execution, and seated himself on a stone at the gate of the Louvre, where seeing the king step into his coach, about four o'clock in the evening, to go without guards to the arsenal to confer with the duke de Sully, he carefully observed the place the king took, and followed a little behind, waiting for an opportunity to perpetrate his design. A number of carts having stopped the king's coach in the middle of the street of Feslonnerie, which was then very narrow, Ravillac ascended one of the hind wheels, and advancing his body into the coach, at the moment when the king had turned towards the duke d'Epemon, who was seated by his side, he gave him two stabs on the breast, the second of which cut the artery of the lungs, and the blood flowed with such impetuosity, that the king was stifled in an instant, without being able to speak a single word, the 14th of May, 1610. Ravillac, by throwing away the knife, might have escaped unknown, but continuing in the same place with the knife still dropping with blood, the duke d'Epemon caused him to be seized, on which he was conducted to the Hotel de Retz, where he was suffered to speak to every one that came. Two days after he

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was removed to the Conciergere, where several persons had also the liberty of seeing him. In short, having taken his trial, he was condemned to be drawn in pieces by four horses, and was thus quartered at the Greve, the 17th of May, 1610, in the 31d year of his age, after having constantly persisted in all his examinations, that he had no accomplices, though it was generally believed that he had. The fury of the people, both during the punishment, and after the execution of Ravillac, shewed, in the most expressive manner, their attachment and love to the person of that great king.

RAVELIN, in fortification, was anciently a flat bastion, placed in the middle of a curtain: but now a detached work composed only of two faces, which make a salient angle, without any flanks, and raised before the curtain on the counterscarp of the place. A ravelin is a triangular work, resembling the point of a bastion, with the flanks cut off.

RAVEN, in ornithology, a species of the corvus. See *Corvus*.

RAVISHMENT, in law, an unlawful seducing either of a woman, or an heir that is in ward: sometimes it is also used in the same sense as a rape.

RAY, in optics, a beam of light, emitted from a radiant, or luminous body. See *Light*.

Rays are defined by Sir Isaac Newton, to be the least parts of light, whether successive in the same line, or cotemporary in several lines. For that light consists of parts of both kinds is evident, since one may stop what comes this moment in any point, and let pass that which comes presently after: now the least light, or part of light, which may be thus stopped, he calls a ray of light. A ray or right line, drawn from the point of concurrence of the two optical axes, through the middle of the right line, which passes by the centers of the two pupils of the eyes, is by some called a common ray.

RAYONANT, or CROSS RAYONANT, in heraldry, one which has rays of glory behind it, darting out from the center to all the quarters of the escutcheon.

RE, in grammar, an inseparable particle added to the beginning of words, to double, or otherwise modify their meaning; as in *re-action*, *re-ascend*, *re-export*, &c.

RE-ACTION, in physiology, the resistance made by all bodies to the action

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or impulse of others; that endeavour to change its state, whether of motion or rest.

REACH, any portion of a river which runs upon a straight line, comprehending the nearest distance between two points.

READINGS, or *various READINGS*; in criticism, the different manner of reading the texts of authors in antient manuscripts, where a diversity has arisen from the corruption of time, or the ignorance of copyists. A great part of the business of critics lies in settling the readings, by confronting the various readings of the several manuscripts, and considering the agreement of the words and sense.

REAL, is applied to a being that actually exists, in which sense it coincides with actual.

REAL, in law, is opposed to personal.

Thus real action is that whereby the plaintiff lays title to land, &c.

REALISTS, a sect of school philosophers, formed in opposition to the Nominalists.

REALM, a country which gives its head, or governor, the denomination of a king.

REAR, a term used in composition, to denote something behind, or backwards, in respect of another, in opposition to van; thus, in a military sense, it is used for the hind part of an army, in opposition to the front.

REAR-DIVISION of a *Fleet*. A Squadron of ships of war is always classed in three divisions, commanded by three superior officers, and are termed the center, the van, and rear division. The center is governed by the commander in chief, the van which advances first by the second in command, and the rear, or last division, by the next officer in rank. See *Center, Division, Squadron*.

REASON, *Ratio*, a faculty, or power of the mind, whereby it distinguishes good from evil, truth from falsehood; whereby man is distinguished from beasts; and wherein it is evident he greatly surpasses them: or reason is that principle whereby, comparing several ideas together, we draw consequences from the relations they are found to have. Some define reason to be the comprehension of many principles which the mind successively can conceive, and from which conclusions may be drawn. And others conceive reason as no other than the understanding itself considered as it discourses. Reason, Mr.

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Locke observes, contains two distinct faculties of the mind, viz. sagacity, whereby it finds intermediate ideas; and Illation, whereby it so orders and disposes of them, as to discover what connection there is in each link of the chain, whereby the extremes are held together, and thereby, as it were, draws into view the truth sought for. Illation, or inference, consists in nothing but the perception of the connection there is between the ideas in each step of the deduction, whereby the mind comes to see either the agreement, or disagreement, of any two ideas, as in demonstration, in which it arrives at knowledge; or their probable connection, on which it gives or with-holds its assent, as in opinion. Sense and intuition reach but a little way; the greatest part of our knowledge depends upon deductions and intermediate ideas. In those cases where we must take propositions for true, without being certain that they are so, we would need to find out, examine, and compare the grounds of their probability. In both cases the faculty, which finds out the means, and rightly applies them to discover certainty in the one, and probability in the other, is that which we call reason.

Reason, as contradistinguished to faith, Mr. Locke takes to be the discovery of the certainty or probability of such propositions or truths, as the mind arrives at, by deductions made from such ideas, which it has got by the use of its natural faculties, viz. by sensation or reflection; whereas faith, on the other hand, is the assent to any proposition upon the credit of the proposer, as coming immediately from God, which we call revelation.

This use of the word reason our author takes to be very improper; faith, as has been already observed, being nothing else but a firm assent of the mind, which, if regulated, as is our duty, cannot be afforded to any thing but upon good reason, and so cannot be opposite to it.

REASON is also taken in different other significations; sometimes it denotes true and clear principles; sometimes it is taken for clear and fair deductions from these principles; and sometimes for the cause, particularly the final cause.

REASONING, *RATIOCINATION*, the exercise of that faculty of the mind called reason; or it is an act or operation of the mind, deducing some unknown proposition from other previous ones that are evident and known. It often happens in the comparing ideas together, that their

their agreement or disagreement cannot be discerned at first view, especially if they are of such a nature as not to admit of an exact application to one another: here then, as has been already observed under REASON, it becomes necessary to look out after some third idea that will admit of such an application as the present case requires. Hence it appears that every act of reasoning necessarily includes three distinct judgments; two wherein the ideas, whose relation we want to discover, are severally compared with the middle idea; and a third wherein they are themselves connected, or disjoined, according to the result of that comparison. Now, as our judgments when put into words are called propositions, so the expressions of our reasonings are termed syllogisms. And hence it follows, that as every act of reasoning implies three several judgments, so every syllogism must include three distinct propositions.

In order, therefore, to infer a conclusion by a single act of reasoning, the premises must be intuitive propositions; where they are not, previous syllogisms are required; in which case, reasoning becomes a complicated act taken in a variety of successive steps. This frequently happens in tracing the more remote relations of our ideas, where many middle terms being called in, the conclusion cannot be made out, but in consequence of a series of syllogisms following one another in train. Hence we may clearly perceive that reasoning, in the highest exercise of that faculty, is no more than an orderly combination of simple acts of reasoning. See *Demonstration*.

Thus we see that reasoning, beginning with first principles, rises gradually from one judgment to another, and connects them in such a manner, that every stage of the progression brings intuitive certainty along with it.

All the aims of human reasoning may in the general be reduced to these two.

1. To rank things under those universal ideas to which they truly belong; and,
2. To ascribe to them their several attributes and properties in consequence of that distribution.

This first aim of reason then is to determine the genera and species of things; and the second end regards the sciences and the affairs of common life. See *Genus*, *Species*, &c.

As in tracing the most distant relation of things we must always have recourse to intervening ideas, and are more or less

successful in our researches, according to our acquaintance with those ideas, and ability of applying them, it is evident, that, to make a good reasoner, two things are principally required; first, an extensive knowledge of those intermediate ideas, by means of which things may be compared one with another; secondly, the skill and talent of applying them happily in all particular instances that come under consideration.

There is another species of reasoning with two propositions, which seems to be complete in itself, and where we admit the conclusion without supposing any tacit or suppressed judgment in the mind from which it follows syllogistically. This happens between propositions where the connection is such, that the admission of the one necessarily, and at the first sight, implies the admission also of the other: for if it falls out that the proposition on which the other depends is self-evident, we content ourselves with barely affirming it, and infer that other by a direct conclusion: thus, by admitting an universal proposition, we are forced also to admit of all the particular propositions comprehended under it; this being the very condition that constitutes a proposition universal. If then, that universal proposition chances to be self-evident, the particular ones follow of course, without any farther train of reasoning.

Another species of reasoning is that called by logicians induction; in order to the right understanding of which, it will be necessary to observe, that our general ideas are for the most part capable of various subdivisions: thus the idea of the lowest species may be subdivided into its several individuals; the idea of any genus into the different species it comprehends; and so of the rest. If then we suppose this distribution to be truly made, so as to take in the whole extent of the idea to which it belongs, then it is plain that all the subdivisions or parts of any idea taken together, constitute the whole idea: thus the several individuals of any species taken together constitute the whole species, and all the various species comprehended under any genus, make up the whole genus; this being allowed, it is apparent that whatever may be affirmed of all the several subdivisions and classes of any idea, ought to be affirmed of the whole general idea to which these subdivisions belong. What may be affirmed of all the individuals of any species may be affirmed of the whole species; and what may be affirmed

firmness of all the species of any genus, may also be affirmed of the whole genus. This way of reasoning, where we infer universally concerning any idea, what we had before affirmed or denied separately of all its several subdivisions and parts, is called reasoning by induction: thus, if we suppose the whole tribe of animals subdivided into men, beasts, birds, insects, and fishes, and then reason concerning them in this manner; all men have a power of beginning motion; all beasts, birds, and insects have a power of beginning motion; all fishes have a power of beginning motion; therefore all animals have a power of beginning motion.

RE-ATTACHMENT, in law, a second attachment of a person, who was formerly attached and dismissed the court without day, on account of the not coming of the justices, or other such casualty: without which, a cause discontinued cannot be revived, but the defendant must plead *de novo*.

REBATE, or **REBATEMENT**, in commerce, a term much used at Amsterdam, for an abatement in the price of several commodities, when the buyer, instead of taking time, advances ready money.

Rebate, which among us is usually called prompt payment, is estimated by months, and is only allowed for certain mercandize, which, according to the custom of Amsterdam, are,

German wools,	} which are sold at {	15	} months rebate.
Spanish wools,		21	
Ashes and pot-ashes,		18	
Italian silks,		33	
Sugars of Brazil,		18	

That is, those commodities are sold for ready money, only deducting or rebating the interest of the money, which need not have been paid till the end of 15, 21, &c. months. This interest is usually regulated on the foot of 8 *per cent. per annum*.

REBELLION, a traiterous taking up arms against the king by his own natural subjects, or those formerly subdued. There was a rebellion of the English against William Rufus, in favour of his brother Robert, in 1088, which was extinguished in 1090. A rebellion of the Welch, who defeated the Normans and English in 1095. A rebellion of the English under Wat Tyler, June 12th, 1381. A rebellion of the barons, 1387.

A rebellion of the English and Welch in 1400. The rebellion of Jack Cade, in favour of the duke of York, June 1st, 1450. A rebellion of the English in 1469. Another in 1536. Another in 1549. The rebellion of Wiat, in 1554. A rebellion in the north of England in 1569. A rebellion of the Irish under Tyrone in 1599. A rebellion of the Scotch in 1639. A rebellion of the Irish in 1641. A rebellion of the Scotch in 1666. A rebellion under Monmouth, June 11th, 1685. A rebellion of the Scotch, under the pretender, in 1715. Another of the Scotch, in 1745.

REBELLIOUS ASSEMBLY, in law, an assembling together of twelve or more persons, with an intent of unlawfully making use of their own authority, to change or alter any laws of this kingdom, or to destroy the inclosures of any ground, or the banks of any fish-pond, pool, or conduit, to the intent that it may lie waste and void; or to destroy the deer in any park, fish in fish-ponds, coneyes in any warren; or any house, barn, mills, or bays; or to burn stacks of corn, abate rents, or prices of victuals, &c. See *Riot*.

REBUS, an enigmatical representation of some name, &c. by using figures or pictures instead of words, or parts of words.

REBUTTER, in law, the defendant's answer to the plaintiff's surrejoinder, in a cause depending in the court of Chancery, &c. also when a person warrants lands, &c.

RECAPITULATION, in oratory, &c. a part of the peroration. Recapitulation is a summary, or concise and transient enumeration of the principal things insisted on in the preceding discourse, whereby the force of the whole is collected into one view.

RECEIPT, in commerce, an acquittance or discharge in writing, intimating that the party has received a certain sum of money, either in full for the whole debt, or in part, or on account.

RECEIPT, in book-keeping, an account of all the money and goods received. See *Book-keeping*.

RECEIVER, in chemistry, a vessel of earth, glass, &c. for receiving any distilled liquor.

RECEIVER, in pneumatics, a glass-vessel for containing the thing on which an experiment in the air-pump is to be made. See *Air-pump*.

RECEIVER, RECEPTOR, or RECEPTOR,

TATOR, in law, is commonly understood in a bad sense, and used for such as knowingly receive stolen goods from thieves, and conceal them. This crime is felony, and the punishment is transportation for fourteen years.

RECEPTACULUM CHYLI, or **PECQUET'S RESERVATORY**, the reservoir or receptacle for the chyle, situated in the left side of the upper vertebra of the loins, under the aorta, and the vessels of the left kidney.

RECEPTACULUM SEMINUM, receptacle of the seed, a term used by botanists, for the base, or thalamus, which supports the seeds: the disc of this part is either flat, concave, convex, globular, or pyramidal; and its surface is sometimes naked, and sometimes paleaceous.

RECHARGE, a second charge or loading of fire-arms.

RECHEAT, in hunting, a lesson which the huntmen play on the horn when the hounds have lost their game, to call them back from pursuing a counter-scent.

RECIPE, in medicine, a prescription or remedy, to be taken by a patient; so called because always beginning with the word *Recipe*, that is, *Take*, which is generally denoted by the abbreviation *R.*

RECIPIANGLE, or **RECIPIENT-ANGLE**, a mathematical instrument, serving to measure re-entering and salient angles, especially in fortification.

RECIPROCAL, in general, something that is mutual, or which is returned equally on both sides, or that affects both parties alike. There are reciprocal duties between the prince and his subjects, between the husband and wife, &c. also in a physical sense, the action between the agent and patient is reciprocal; that is, the patient re-acts as much upon the agent, as this acts upon it. See *Reaction*.

RECIPROCAL TERMS, among logicians, those which have the same signification, and consequently are convertible, or may be used for each other.

RECIPROCAL VERSES, in grammar, those which express an action that is reflected upon the agent or agents.

Reciprocal verses, in poetry, such as run the same both forwards and backwards.

RECIPROCAL FIGURES, in geometry, those which have the antecedents and consequents of the same ratio in both figures.

RECIPROCAL PROPORTION, in

arithmetic, is when, in four numbers, the fourth is less than the second, by so much as the third is greater than the first; and *vice versa*. See *Proportion*.

RECITATIVO, or **RECITATIVE**, in music, a kind of singing, that differs but little from ordinary pronunciation, such as that in which the several parts of the liturgy are rehearsed in cathedrals, or that wherein the actors commonly deliver themselves on the theatre at the opera, when they are to express some action or passion, to relate some event, or reveal some design.

RECKONING, in navigation, is the estimation of a ship's course at sea, as measured by the log-line and glass. See *Dead Reckoning*, *Glass*, *Journal*, *Log*, and *Navigation*.

The place of the ship is discovered in the reckoning by taking the several differences of latitude and departure from the different courses the ship has run, and adding them together, if she has only run in one quadrant of the horizon, to obtain the total difference of latitude and departure made for a certain period, as 24 hours, and consequently the latitude and longitude into which the ship has arrived. The journal in which this reckoning is formally stated, together with all the material events which happen in the course of a voyage, is variously kept, according to the fancy or caprice of the navigator. In the royal navy, indeed, there is a regular uniform method which all the officers observe.

RECLAIMING, or **RECLAMING**, in our ancient customs, a lord's pursuing, prosecuting, and recalling his vassal, who had gone to live in another place without his permission.

RECLINER, or **RECLINING DIAL**. See *Dialling*.

RECLUSE, among the papists, a person shut up in a small cell of an hermitage, or monastery, and cut off, not only from all conversation with the world, but even with the house. This is a kind of voluntary imprisonment, from a motive either of devotion or penance.

RECOGNITION, in law, an acknowledgment; a word particularly used in our law-books, for the first chapter of the statute 1 Jac. 1. by which the parliament acknowledged, that after the death of queen Elizabeth, the crown had rightfully descended to king James.

RECOGNIZANCE, or **RECOGNISANCE**, in law, a bond or obligation of record, acknowledged to the king: thus

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called, because recognized or acknowledged in some court of record, or before some judge, master in chancery, or justice of the peace.

RECOIL, or **REBOUND**, the starting backward of a fire-arm, after an explosion.

Mersennus tells us, that a cannon 12 feet in length, weighing 6400 lb. gives a ball of 24 lb. an uniform velocity of 640 feet per second. Putting therefore $W = 6400$, $w = 24$, $V = 640$, and $v =$ the velocity with which the cannon recoils; we shall have (because the momentums of the cannon and ball are equal) $Wv = wV$; and so $v = \frac{wV}{W} = \frac{24 \times 64}{6400} = 2,4$; that

is, it would recoil at the rate of $2\frac{4}{10}$ feet per second, if free to move.

RECOLLECTION, a mode of thinking, by which ideas sought after by the mind, are found, and brought again to view.

RECOLLECTS, a congregation of reformed Franciscans, called also friars-minors of St. Francis, of the strict observance. See *Franciscans*.

RECONNOITRE, in war, to view and examine the state and situation of things.

RECORD, an authentic testimony in writing, contained in rolls of parchment, and preserved in a court of record.

RECORDER, one whom the mayor and other magistrates of a city or corporation associate to them, for their better direction in matters of justice, and proceedings in law; on which account this person is generally a counsellor, or other person well skilled in the law.

RECOVERY, in law, the obtaining any thing by judgment or trial at law. Recoveries are of two kinds, a true recovery, and a feigned or common one. A true recovery is the actual recovering of any thing, or its value, by judgment and trial at law: as where a person is sued for land, or other things real and personal, and obtains a verdict in his favour. A feigned or common recovery, is a formal act by consent, made use of for the better securing of lands, tenements, &c. the end and effect of which is, to dock and destroy estates-tail, remainders, and reversions, and to bar the former owners.

RECREMENT, in chemistry, some superfluous matter separated from some other that is useful: in which sense it is the same with scoriae, faeces, and excrements. See *Scoriae*, &c.

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RECRIMINATION, in law, an accusation brought by the accused against the accuser, upon the same fact.

RECRUITS, in military affairs, new-raised soldiers, designed to supply the place of those who have lost their lives in the service, or are disabled by age or wounds.

RECTANGLE, in geometry, the same with a right-angled parallelogram. In arithmetic and algebra, a rectangle signifies the same with factum or product.

RECTANGLED, **RECTANGULAR**, or **RIGHT-ANGLED**, appellations given to figures and solids which have one or more right-angles: thus, a triangle with one right angle, is termed a rectangled triangle; also parallelograms, with right angles, squares, cubes, &c. are rectangular. Solids, as cones, cylinders, &c. are also said to be rectangular, with respect to their situation, when their axes are perpendicular to the plane of the horizon.

The ancient geometricians always called the parabola, the rectangular section of a cone.

RECTIFICATION, the art of setting any thing to rights; and hence, to rectify the globes, is to fit them for performing any problem.

RECTIFICATION, in geometry, the finding a right line, equal in length to a curve. See *Curve*.

RECTIFICATION, in chemistry, is only the repetition of a distillation, or sublimation several times, in order to render the substance purer, finer, and freer from aqueous or earthy parts. The perfection of rectifying spirits, according to Dr. Shaw, depends upon finding out a simple method of separating all the oil and water from it; and he observes, that the great affinity betwixt the essential oil and spirit, is the physical cause of the difficulty found in the rectification of brandies. He recommends the way of working from a spirit largely diluted with water, into water again; whereby the essential oil would, at one operation, be doubly separated.

RECTIFIER, in navigation, an instrument consisting of two parts, which are two circles either laid one upon, or let into the other, and so fastened together in their centers, that they represent two compasses, one fixed, the other moveable; each of them divided into the thirty-two points of the compass, and three hundred and sixty degrees, and

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numbered both ways, from the north and the south, ending at the east and west, in ninety degrees. The fixed compass represents the horizon, in which the north and all the other points of the compass are fixed and immoveable. The moveable compass represents the mariners compass, in which the north and all other points are liable to variation. In the center of the moveable compass is fastened a silk thread, long enough to reach the outside of the fixed compass. But if the instrument be made of wood, there is an index instead of the thread. Its use is to find the variation of the compass, to rectify the course at sea, having the amplitude or azimuth given.

RECTILINEAR, in geometry, right-lined; thus figures whose perimeter consists of right lines are said to be rectilinear.

RECTITUDE, in philosophy, refers either to the act of judging or of willing; and therefore whatever comes under the denomination of rectitude is either what is true or what is good; these being the only objects about which the mind exercises its two faculties of judging and willing.

RECTOR, a term applied to several persons whose offices are very different; as, 1. The rector of a parish is a clergyman that has the charge and cure of a parish, and possesses all the tythes, &c. 2. The same name is also given to the chief elective officer in several foreign universities, particularly in that of Paris. 3. Rector is also used in several convents for the superior officer who governs the house: and the Jesuits give this name to the superiors of such of their houses as are either seminaries or colleges.

RECTORY, a parish-church, parsonage, or spiritual living, with all its rights, tythes, and glebes.

RECTUM, in anatomy, the third and last of the large intestines or guts. The rectum is in length about three hands breadth, and its diameter about three fingers. It has its beginning at the lower vertebrae of the loins, and at the lower end is the anus. It is connected to the os sacrum, the os coccygis, and the urinary bladder in men; but in women, to the vagina uteri. The coats of the rectum are more thick and fleshy than those of any other of the intestines: it has in general no valves, but it has several rugae: the absence of valves here is to prevent the expulsion of the faeces from being retarded.

RED

RECTUS, in anatomy, a name common to several pair of muscles, so called on account of the straightness of their fibres, as, 1. The rectus major anticus, which arises from the transverse apophyses of the five lower vertebrae of the neck, and is inserted into the os occipitis. 2. The rectus minor anticus, called by Cowper, musculus annuens: this arises from the anterior surface of the atlas, or first vertebra of the neck, and lies concealed, as it were, under the former, till it is at length inserted a little behind it, into the os occipitis: these two pair of muscles serve to move the head forward. 3. The rectus major posticus, one of the extensors of the head, which has its origin from the spinose apophysis of the epistropheus, and is inserted into the os occipitis. 4. The rectus minor posticus, which is also one of the five extensors of the head, has its rise from the posterior part of the atlas, and its end under the former. 5. The rectus lateralis, which serves to bend the head on one side, has its origin from the upper surface of the transverse apophysis or the atlas; from this it ascends straight with a short body, but considerably thick; and is inserted partly into the os occipitis, and partly into the temporal bone, near the incisure of the mastoid process. 6. The rectus tibiae, one of the four extensors of the leg, which has its origin from the anterior and inferior spine of the ileum.

RECURRENTS, in anatomy, a name given to several large branches of nerves sent out by the par vagum, from the upper part of the thorax to the larynx.

RECURRENT VERSES, the same with those called reciprocal. See *Reciprocal*.

RECUSANTS, such persons as acknowledge the pope to be the supreme head of the church, and refuse to acknowledge the king's supremacy, who are hence called popish recusants. These are in England charged with double taxes, not merely as Romanists, but as recusants.

RECUSATION, the desiring a judge to refrain from judging in a certain cause, on account of his kinship, capital enmity, &c. to one of the parties.

RED, in physics, one of the simple or primary colours of natural bodies, or rather of the rays of light. See *Colour*, *Light*, and *Ray*.

The red rays are those which of all others are the least refrangible: hence, as Sir Isaac Newton supposes the different

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ferent degrees of refrangibility arise from the different magnitudes of the luminous particles whereof the rays consist, the red rays, or red light, is concluded to be that which consists of the largest particles. Authors distinguish three general kinds of red; one bordering on the blue, as columbine, or dove-colour, purple, and crimson. Another bordering on yellow, as flame-colour and orange; and between these extremes is a medium, partaking neither of the one nor the other, which is what we properly call red. Mr. Boyle observes, that red is an obvious, and generally a pleasing colour; and that anciently it was customary to present red objects to elephants, to render them more fierce; and that the same colour irritates turkey-cocks. He observes also, that among the several changes of colour which bodies acquire, or disclose, by digestion, it is very remarkable to find a redness rather than any other colour in most tinctures; and even in the more gross solutions made of almost all concretes that abound either with mineral or vegetable sulphur, though the menstruum employed about these solutions, or tinctures, be never so limpid.

RED, in heraldry. See *Gules*.

RED-BOOK of the Exchequer, an ancient record or manuscript volume, in the keeping of the king's remembrancer, containing divers miscellany treatises relating to the times before the Conquest.

REDDLE, a soft, heavy red marle, of great use in colouring; and being washed and freed from its sand, is often sold by our druggists under the name of bole armenic.

REDEMPTION, in law, a faculty or right of re-entering upon lands, &c. that have been sold and assigned, upon re-imbursing the purchase money with legal costs.

REDOUBT, or REDOUTE, in fortification, a small square fort, without any defence but in front, used in trenches, lines of circumvallation, contravallation, and approach, as also for the lodgings of corps de garde, and to defend passages. In marshy grounds, redoubts are frequently made of stone works, for the security of the neighbourhood; their face consists of from ten to fifteen fathom, the ditch round them, from eight to nine feet broad and deep, and their parapets have the same thickness.

REDUCT, or REDUIT, a military term signifying an advantageous piece of ground, entrenched, and separated from

RED

the rest of the place, camp, &c. for an army, garrison, &c. to retire to in case of a surprise.

REDUCT, in building, a quirk or little place taken out of a larger to make it more uniform and regular; or for some other convenience, as for a little cabinet aside of a chimney, for alcoves, &c.

REDUCT, or REDUX, among chemists, a powder by which calcined metals and minerals are again reduced to their regulus, or pure substance.

REDUCTION, in the schools, a manner of bringing a term or proposition which was before opposite to some other to be equivalent to it.

REDUCTION of *Syllogisms*, a regular changing or transforming of an imperfect syllogism into a perfect one; or it is a change of a syllogism in respect of form, whereby the necessity of the illation or inference is made more evident. See *Syllogism*.

REDUCTION, in arithmetic, that rule whereby number of different denominations are brought into one denomination. Reduction is but the application of multiplication and division. For, first, a higher denomination is brought into a lower one, by multiplying the higher denomination with so many of the lower as are contained in the higher; still keeping them equivalent in value. This is called reduction descending. Secondly, a lower or inferior denomination is reduced into a higher or superior one, by dividing the lesser one with so many of its denomination as is contained in the greater. This is the converse of the last, and is termed reduction ascending. Thus pounds are reduced into shillings by multiplying with 20; shillings into pence, by multiplying with 12; and pence into farthings, by multiplying with 4. On the other hand, shillings are reduced into pounds, by dividing with 20; pence into shillings by dividing with 12; and farthings into pence, by dividing with 4.

Examples. Let it be required to reduce 357 l. into shillings, and those shillings into pence; $357 \times 20 = 7140 =$ the shillings in 357 l. and $7140 \times 12 = 85680 =$ the pence in 357 l. as was required. Again, let it be required to reduce 85680 d. into shillings, and those shillings into pounds; $85680 \div$ by 12 $= 7140 =$ the shillings in 357 l. and $7140 \div$ by 20 $= 357$ l. as was required.

If there remain any thing in each division,

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vision, it is respectively either odd pence, shillings, or farthings; thus 4113788 farthings, being reduced, give 42951 12 s. 3 d.

But when the numbers proposed to be reduced are of several denominations, and it is required to bring them all to the lowest, you must reduce, as before, the highest or greatest denomination to the next less, adding the numbers that are of that next denomination together; then reduce their sum to the next lower denomination; adding together all the numbers that are of that denomination, and so proceed gradually on until all is done.

REDUCTION of Fractions. See *Fractions*.

REDUCTION, of Equations, in algebra. See *Equation*.

REDUCTION of a Figure, Design, or Draught; is the making a copy thereof either larger or smaller than the original, still preserving the form and proportion. The great use of the proportional compasses is the reduction of figures, &c. whence they are called compasses of reduction.

There are various methods of reducing figures, &c. The most easy is by means of the pentagraph, or parallogram.

REDUCTION to the Ecliptic, in astronomy. The place of any star reduced to the ecliptic, is that point where the secondary passing through the star intersects the ecliptic.

REDUCTION, in metallurgy, the bringing back metalline substances which have been changed into scorix or ashes, or otherwise divested of their metallic form, into their natural and original state of metals again.

REDUCTION, in surgery, denotes an operation whereby a dislocated, luxated, or fractured bone is restored to its former state or place. See *Luxation* and *Fracture*.

REDUNDANCY, or REDUNDANCE, a fault in discourse, consisting in the use of a superfluity of words. Words perfectly synonymous are redundant, and ought to be retrenched.

REDUNDANT HYPERBOLA, a curve of the higher kind, thus called, because it exceeds the conic section of that name, in the number of its hyperbolic legs; being a triple hyperbola with six hyperbolic legs.

REDUPLICATION, in rhetoric, a figure whereby a verse begins with the

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same word as the preceding one ends with.

REDUPLICATION, in logic, a kind of condition expressed in a proposition indicating or assigning the manner wherein the predicate is attributed to the subject. Hence reduplicative propositions are such wherein the subject is repeated with some circumstance or condition. Thus, "Men, as men are rational: kings, as kings, are subject to none but God."

REED, an ancient Jewish measure. See *Measure*.

REEF, in naval affairs, certain spaces or divisions of the sail, which are taken in, or let out, in proportion to the increase or diminution of the wind. In a square sail they are placed parallel to its upper edge, below one another, at equal distances, each reef containing about a seventh part of the sail's depth, and are thus formed; at the bottom of each division there is a row of holes stretching across the sail, through which are inserted a number of platted cords, called points, in length each about twice the circumference of the yard, and these bind the intermediate space of canvas in plaits close up to the yard, from end to end; the sail being lowered slack down for that purpose.

REEF-LINES are used to the courses only, and are passed in spiral turns through the holes of the reef, and over the head of the sail successively, till they reach the extremities of the reef, and then being hauled tight, draw it close up to the yard.

REEF-TACKLES are ropes which run through holes at each top-sail yard end, and are fastened down on the edge or keech of the top-sail, immediately under the lowest reef. By hauling up these tackles the reef-band, which contains the holes, is bound close up to the yard, for the more readily tying the points.

REEL of the Log, in naval affairs, a sort of winch, or roller, containing four or five spokes, and an axis; upon which is wound the log-line, which measures a ship's way at sea. See the article *Log*.

REEL, in the manufactures, a machine serving for the office of reeling. There are various kinds of reels, some very simple, others very complex. Of the former kinds those most in use are, 1. A little reel held in the hand, consisting of three pieces of wood, the biggest and

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and longest whereof, which does not exceed a foot and a half in length, and $\frac{1}{2}$ of an inch in diameter, is traversed by two other pieces disposed different ways.

1. The common reel, or windlace, which turns upon a pivot, and has four flights traversed by long pins or sticks, whereon the skain to be reeled is put, and which are drawn closer or opened wider, according to the skain.

REELING, in the manufactories, the winding of thread, silk, cotton, or the like, into a skain, or upon a bottom, to prevent its entangling. It is also used for the charging or discharging of bobbins or quills. To use them in the manufacture of different stuffs, as thread, silk, cotton, &c. Reeling is performed different ways and on different engines.

RE-ENTRY, in law, signifies the resuming or retaking that possession which any one had lately foregone; as where a person makes a lease of lands to another, the lessor thereby quits the possession, and if the lessee covenants that upon non-payment of the rent reserved, the lessor may lawfully re-enter, being as much as if it was conditioned for the lessor to take the land again into his hands, and recover the possession again by his own act without the assistance of the law.

REEVING, in the sea-language, the act of thrusting a rope through any hole, particularly through the channels of several blocks, to form a tackle or complication of pulleys.

RE-EXCHANGE, in commerce, a second payment of the price of exchange or rather the price of a new exchange, due upon a bill of exchange that comes to be protested, and to be refunded the bearer by the drawer or indorser.

REFECTION, among ecclesiastics, a spare meal or repast just sufficing for the support of life: hence the hall in convents, and other communities, where the monks, nuns, &c. take their refectations or meals in common, is called the refectory.

REFERENCE, in writing, &c. a mark relative to another similar one in the margin, or at the bottom of the page, where something omitted in the text is added, and which is to be inserted either in reading or copying.

REFINING, in general, the art of purifying a thing; including not only the assaying or refining of metals, but likewise the clarification of liquors.

REFINING of Gold is performed three ways, viz. either with antimony, subli-

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mate, or aqua fortis; the last of, which is the most usual, and is called depart, or quartation. To refine gold with antimony, they make use of a wind furnace, and a common crucible of a size answerable to the quantity of gold to be refined; always taking care that the gold and antimony, both together, do not fill the crucible more than half full. After the gold is melted in the crucible, the antimony is thrown in in powder: the proportion of the antimony to the gold is eight ounces to a pound, if the gold be between sixteen and twenty-two carats fine; if it be under sixteen carats, then they use five quarters of a pound to eight ounces of gold; and still the greater quantity of antimony is required, the coarser the gold is. As soon as they have put the antimony into the crucible they cover it, and after they have charged the furnace with charcoal, they put on the capital, which is let to stand till such time as the crucible is left quite bare; then they take off the capital, and leave the crucible to cool in the furnace of itself, till such time as they can take it out by the hand; then they break it, to get out the button, or culot, which is a mass of fine gold, remaining at the bottom, with the faces of the antimony, the silver and copper alloy, and sometimes little particles of gold itself over it. But notwithstanding the gold thus prepared is very pure, yet the antimony gives it such a hard brittle quality, that it ceases to be ductile, and must be softened by the fire with salt petre and borax, to bring it to itself. In order to this operation, they prepare what is called a dry-coppel, which is a coppel made of crucible earth, that does not imbibe like the coppels made of ashes. When the coppel has been sufficiently heated in the refining surface, they put the gold into it, and cover it over with charcoal. As soon as the gold is dissolved, which is very soon, by reason of the remains of the antimony, they blow it with the bellows to drive the mineral entirely away, which now goes off in smoke; and add to it, as soon as the fumes cease, a little salt-petre and borax in powder, which collect the impurities that remained upon the dissolution, and fix the gold in the coppel in the form of a plate. Then the gold is taken out of the coppel, and melted again in a crucible, with an addition of two ounces of salt-petre and borax in powder, to each eight ounces of gold, as soon as it has ceased to fume; and then it is cast into

an ingot, which upon trial is found to be twenty-three carats, twenty-six thirty-seconds fine. The particles of gold, detained with the alloy in the faces of the antimony, are got out by a dry coppel, with the same meltings and ingredients, as were used in softening the former: and when they are certain, by the assay, how much gold that matter contains, they refine it to separate the copper, and afterwards make the depart or quantation. As for the gold which may be left sticking to the dry coppels, it is got by breaking and pulverizing the crucibles, and by repeated washings of the powder of them. The method of refining gold by means of sublimate is this; they begin the process like that with antimony; that is, in the same furnace, with the same coal, the same fire, and the same crucibles. When the gold is melted in the crucible, they cast in the sublimate, not in powder, but only broken into pieces: the proportion is, if the gold be of twenty-two carats, an ounce or an ounce and a half, or even two ounces of the sublimate to eight ounces of the gold; if of twenty carats, three ounces; and if it be only from eighteen to twelve, five or six ounces of the sublimate to eight of the gold, in which last case they part the sublimate into two, and put in one half at a time with the gold into a new crucible; which, when the operation is over, leaves the gold of eighteen or twenty carats, according as it was in fineness before. This done, they put the broken sublimate into a crucible with the melted gold, covering it immediately to smother the mineral; and then fill the furnace with charcoal, having first put on the capital; after a quarter of an hour they take off the capital, lay the crucible bare, and blow off all the ashes and other impurities, that may be floating on the liquid gold, with a pair of bellows. This is repeated again, till the impurities of the gold are carried off by the sublimate appearing of a bright glittering colour; after which being taken out of the crucible, it is cast into an ingot.

This method of refining by sublimate, is both cheaper and more complete than that by antimony; but they are both exceeding dangerous, by reason of the sulphureous and arsenical exhalations; on which account the method of quantation is most practised.

REFINING OF SILVER is performed two ways; one with lead, and the other with

salt-petre. In order to refine silver with lead, a coppel is filled with a mixture of brick-ashes and ashes of bullocks and other bones. It is set on the fire, and heated red-hot, in which state the silver and lead are put in together, in the proportion of a pound of lead to eight ounces of silver, and even somewhat more lead, if the silver be very coarse. As these two metals melt together, the copper before mixed with the silver dissipates into smoke, or goes away with the scum; and so does the lead itself, leaving the silver alone in the coppel in its proper degree of fineness. In this method of refining, wherein six or seven thousand pounds may be refined at once, the metal is drawn out of the coppel two ways; the one by plunging in it, while still liquid, a thick bar of iron, round which the silver sticks in form of a shell or crust, repeating this again and again; the other is by letting the coppel stand till it is cold; in the bottom of which, the silver fixes in form of a cake. This method of refining silver with lead is both the best and the cheapest; however, for want of workmen who understand it, that with salt petre still obtains in many places; which is performed in a wind furnace. They first reduce the silver to be refined into grains, about the size of a small pea; which is done by first melting it, then throwing it into a tub of common water, and then heating it over again in a boiler. This being done, they put it into a crucible; putting to every eight ounces of silver, two of salt petre. Then they cover the crucible with an earthen lid, in the form of a dome, exactly luted; which lid, however, must have a little aperture in the middle. The crucible being set into the furnace, and covered with charcoal, which is only to be lighted by degrees, at length they give it the full force of the fire, to put the metal into a perfect fusion. This is repeated three times successively, at an interval of a quarter of an hour. After the third fire they uncover the furnace, and let the crucible cool; and at length break it, to get out the silver, which is found in a button or culot, the bottom of which is very fine silver; and the top mixed with the faces of the salt-petre, and the alloy of the silver, and even some particles of fine silver. Then they separate the culot from the impurities, and melt it in a new crucible; and throw charcoal-dust into the dissolution, and work the whole briskly together. Then they

they cover the crucible up again, charge the furnace with coal, and give it a second fire. Having done this, they blow off the ashes and impurities with bellows, from off the top of the metal, till it appears as clear as a looking-glass; and then they throw in an ounce of borax broken to pieces. Then, in the last place, they cover the crucible up again, and give it the last fire, and after this cast it into ingots, which are found eleven penny weight and sixteen grains fine. To recover the silver that may be left in the fæces and scoria, they pound them, and give them repeated lotions in fresh water.

REFINING of sugar, sulphur, camphor, &c. See *Sugar, Camphor, &c.*

REFLECTION, or REFLEXION, in mechanics, the return or regressive motion of a moving body, occasioned by some obstacle which hindered it from pursuing its former direction.

REFLECTION, in catoptrics, the return of a ray of light from the polished surface of a speculum or mirror. The ray, thus returned, is called a reflex, or reflected ray, or ray of reflection; and the point of the speculum, whence the return commences, the point of reflection.

General Rules of REFLECTION.—

1. If a ray of light be reflected from a speculum of any form, the angle of incidence is ever equal to the angle of reflection. This law obtains in percussions of all kinds of bodies, and, consequently, must do so in those of light.

REFLECTION is also used, figuratively, for an operation of the mind; whereby it turns its view backwards as it were upon itself, and makes itself and its own operation the object of its disquisition; and by contemplating the manner, order, and laws, which it observes in perceiving ideas, comparing them together, reasoning, &c. it frames new ideas of the relations discovered therein.

REFLEX, or REFLECT, in painting, is understood of those places in a picture which are supposed to be illuminated by a light reflected from some other body, represented in the same piece.

REFLEX VISION, that performed by means of reflected rays, as from mirrors.

REFLUX of the Sea, the ebbing of the water, or its returning from the shore. See *Tide*.

REFORM, a re-establishment, or revival of formerly neglected discipline, or

a correction of the reigning abuses therein.

REFORMATION, the act of reforming or correcting an error or abuse in religion, discipline, or the like. The Reformation, so called by way of eminence, is the separation of the protestants from the church of Rome, in the beginning and towards the middle of the sixteenth century. See *Lutherans*.

REFRACTED, or REFRACTIVE DIAL, one that shews the hours by means of some refractive transparent fluid. See *Dialling*.

REFRACTION, in mechanics, the deviation of a moving body from its direct course, by reason of the different density of the medium it moves in; or a flexion and change of direction, occasioned by a body's falling obliquely out of one medium into another of a different density.

REFRACTION of Light, in optics, is an inflexion or deviation of the rays of light from their rectilinear course, upon falling obliquely out of one medium into another of a different density. Whatever substance a ray of light passes through, or if it pass through a space void of all substance, it is said, by philosophers, to pass through a medium; and, therefore, if it passes out of any substance, as in air or glass, into a vacuum, or the contrary, it is said to pass out of one medium into another. All bodies being endued with an attractive force, which is extended to some distance beyond their surfaces; when a ray of light passes out of a rarer into a denser medium, if this latter has a greater attractive force than the former, as is commonly the case, and what we shall hereafter always suppose, unless it be mentioned to the contrary, the ray, just before its entrance, will begin to be attracted towards the denser medium, and this attraction will continue to act upon it till some time after it has entered the medium, as we shall shew presently; therefore, if a ray approaches a denser medium in a direction perpendicular to its surface, its velocity will be continually accelerated during its passage through the space in which that attraction exerts itself; and, therefore, after it has passed that space, it will move on till it arrives at the opposite side of the medium, with a greater degree of velocity than it had before it entered. So that, in this case, its velocity only will be altered. Whereas, if a ray enters a denser medium obliquely, it will not only

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have its velocity augmented thereby, but its direction will become less oblique to the surface, just as, when a stone is thrown downwards obliquely from a precipice, it falls to the surface of the ground in a direction nearer to a perpendicular one, than that with which it was thrown by the hand. From hence we see that a ray of light, in passing out of a rarer into a denser medium, is refracted towards the perpendicular; that is, supposing a line drawn perpendicularly to the surface of the medium, through the point where the ray enters, and extended both ways, the ray in passing through the surface is refracted or bent towards the perpendicular line; or, which is the same thing, the line which it describes by its motion after it has passed through the surface, makes a less angle with the perpendicular, than the line it described before.

REFRACTION, in astronomy, is an inflection of the rays of light issuing from a heavenly body, in passing through the atmosphere of the earth, whereby the apparent altitude of it is increased.

The refractions of the heavenly bodies, as the sun, moon, and stars, at all altitudes except very small ones, will be nearly as the tangents of their apparent zenith distances, drawn into the respective density of the atmosphere at the places and times for which such refractions are to be determined; and therefore, if the density be the same, are simply as the tangent of their apparent zenith distances. But at very small altitudes the refractions may be found by this general rule:

As 1 to 9986, so is the sine of any given apparent zenith distance, to the sine of an arch; $\frac{2}{11}$ of the difference of which arch and the zenith given distance is the refraction sought, which for an altitude of 5° , will come out $9' 10''$.

REFRACTION of Altitude, an arch of a vertical circle, whereby the altitude is increased by the refraction.

REFRACTION of Declination, an arch of a circle of declination, whereby the declination of the object is either increased or diminished by the refraction.

REFRACTION of Longitude, an arch of the ecliptic, whereby the longitude of the object is increased or diminished by the refraction.

REFRACTION of Latitude, an arch of a circle of latitude, whereby the latitude of a heavenly object is either increased or diminished by its refraction.

REFRACTION in Island Crystal. There is a double refraction in this substance,

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contrary ways, whereby not only oblique rays are divided into two, and refracted into opposite parts, but even perpendicular rays and one half refracted.

REFRIGERATIVE, in medicine, a remedy which refreshes the inward parts, by cooling them, as clysters, pitans, &c.

REFRIGERATORY, in chemistry, a vessel filled with cold water through which the worm passes in distillations; the use of which is, to condense the vapours as they pass through the worm.

REFUGE, a sanctuary or asylum.

REFUGEES, French Protestants, who by the revocation of the edict of Nantz, have been constrained to fly from persecution, and take refuge in foreign countries.

REGAL, or **ROYAL**, something belonging to a king. See *Royal*.

REGALIA, in law, the rights and prerogatives of a king; which, according to civilians, are six, viz. 1. the power of judicature: 2. the power of life and death: 3. the power of peace and war: 4. a right to such goods as have no owner, as waifs, estrays, &c. 5. assessments; and 6. the coinage of money.

REGALIA is also used for the apparatus of a coronation, as the crown, the scepter with the cross, that with the dove, St. Edward's staff, the globe, and the orb with the cross, four several swords, &c.

REGALIA of the Church, the rights and privileges which cathedrals, &c. enjoy by the grants of kings; and this term is particularly used for such lands and hereditaments as have been given by kings to the church.

REGARDANT, in heraldry, signifies looking behind, and is used for a lion, or other beast, with his face turned towards his tail.

REGENERATION, in theology, the act of being born again by a spiritual birth, or the change of heart and life, experienced by a person who forsakes a course of vice, and sincerely embraces a life of virtue and piety.

REGENT, one who governs a kingdom during the minority or absence of the king.

REGICIDE, **KING-KILLER**, a word chiefly used with us in speaking of the persons concerned in the trial, condemnation, and execution of king Charles I.

REGIMEN, the regulation of diet, and in a more general sense, of all the

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non-naturals, with a view to preserve or restore health. Dr. Mead observes, with respect to regimen, that diseases from intemperance are generally more dangerous than those which proceed from repletion, because we can more expeditiously diminish than increase the juices of the body. Upon this account, though temperance is beneficial to all men, the ancient physicians advised persons in good health to indulge a little now and then, by eating and drinking more plentifully than usual: but of the two, intemperance in drinking is safer than in eating; and if a person has committed excess in the latter, cold water drank upon a full stomach will help digestion; to which it will be of service to add lemon-juice or elixir of vitriol, if he has eaten high seasoned things, rich sauces, &c. then let him sit up for some time, and afterwards sleep. But if a man happens to be obliged to fast, he ought to avoid all laborious work. From satiety it is not proper to pass directly to sharp hunger, nor from hunger to satiety; neither will it be safe to indulge absolute rest immediately after excessive labour, nor suddenly to fall to hard work after long idleness. In a word, all changes in the way of living should be made by degrees. It is also beneficial to vary the scenes of life, to be sometimes in the country, sometimes in town; to go to sea, to hunt, to be at rest now and then, but more frequently to use exercise, and a moderate sleep. The softer and milder kinds of aliment are proper for children, and for youths the stronger. Old people ought to lessen the quantity of their food, and increase that of their drink. But yet some allowance is to be made for custom, especially in the colder climates, like ours; for as in these the appetite is keener, so is the digestion better performed. In the summer, says Dr. Brookes, when the spirits and fluid parts are apt to evaporate, the aliment should be light, moist, fluid, and easy of digestion, repair the loss with the greater speed: and as digestion depends in part on the due preparation of the aliments, it is necessary to chew them well, especially if they are hard, that they may be the more intimately mixed with the saliva; for those who eat in a hurry, without much chewing, are very subject to indigestions. It is well known, the cold stops the pores, and diminishes perspiration. To shun this inconvenience, it will be necessary to put on winter garments pretty early, and leave them off late, and not

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to pass too suddenly from a hot into a cold air, and to avoid drinking any thing cold, when the body is hot, or when a person has been for some time speaking in public. In short, the passions and affections of the mind produce very sensible effects. Joy, anger, fear, and sorrow, are the principal. In the first, the spirits are hurried with too great vivacity; in fear or dread, they are as it were, curbed and concentrated; and continual sorrow and anguish of mind render the fluids of the body thick, and the blood unsuited for a due circulation, whence proceed many chronic diseases: it is therefore, on all accounts, as much our interest as our duty, to keep the passions within due bounds, and to preserve an inward serenity, calmness, and tranquility.

REGIMEN, in chemistry, signifies the due regulation of fire. See *Fire*.

REGIMEN, in grammar, that part of syntax, or construction, which regulates the dependency of words, and the alterations which one occasions in another.

REGIMENT, in war, a body of men, either horse or foot, commanded by a colonel.

REGION, in geography, a large extent of land, inhabited by many people of the same nation, and inclosed within certain limits or bounds.

REGION, in physiology, is taken for a division of our atmosphere, which is divided into the upper, middle, and lower regions. See *Atmosphere*.

Æthereal REGION, in cosmography, is the whole extent of the universe, in which is included all the heavenly bodies, and even the orb of the fixed stars. See *Æther*.

Elementary REGION, according to the Aristotelians, a sphere terminated by the concavity of the moon's orb, comprehending the atmosphere of the earth.

REGION, in anatomy, a division of the human body, otherwise called cavity, of which anatomists reckon three, viz. the upper region, or that of the head; the middle region, that of the thorax or breast; and the lower, the abdomen, or belly.

REGISTER, a public book, in which is entered and recorded memoirs, acts, and minutes, to be had recourse to occasionally, for knowing and proving matters of fact.

REGISTER is also used for the clerk or keeper of a register.

REGISTER, in printing, is disposing of the forms on the press, so as that the

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lines and pages printed on one side of the sheet, fall exactly on that of the other.

REGISTER, among letter-founders, one of the inner parts of the mould, in which the printing-types are cast.

REGISTERS, in chemistry, holes, or chinks with stopples, contrived in the sides of furnaces, to regulate the fire; that is, to make the heat more intense, or remiss, by opening them to let in the air, or keeping them close to exclude it.

REGLET, or **RIGLET**, in architecture, a flat narrow moulding, used chiefly in pannels and compartments, to separate the parts or members from one another, and to form knots, frets, and other ornaments.

REGLETS, or **RIGLETS**, in printing, thin slips of wood, exactly planed to the size of the body of the letter.

REGRATOR, or **REGRATER**, in law, formerly signified one who bought wholesale, or by the great, and sold again by retail; but the term is now used for one who buys any wares or victuals, and sells them again in the same market, or fair, or within five miles round it.

REGULAR, the relation of any thing conformable to the rules of art.

REGULAR Figure, in geometry, a figure both equilateral and equiangular.

REGULAR, or *Platonic Body*, a solid termination on all sides by regular, similar and equal planes, and whose solid angles are all equal. The solid bodies are the five following: 1. The tetrahedron, which is a pyramid, comprehended under four equal and equilateral triangles. 2. The hexahedron, or cube, whose surface is composed of six equal squares. 3. The octahedron, which is bounded by eight equal and equilateral triangles. 4. The dodecahedron, which is contained under twelve equal and equilateral pentagons. 5. The icosahedron, consisting of twenty equal and equilateral triangles. These five are all the regular bodies in nature.

REGULAR Curves, such as proceed gradually in the same geometrical manner, with regard to their curvatures.

REGULAR, in a monastery, a person who has taken the vows.

REGULAR Priest, a priest in some religious order; in contradistinction to a secular priest, or one that lives in the world at large.

REGULATOR of a Watch, the small

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spring belonging to the ballance; serving to adjust its motions, and make it go faster or slower.

REGULUS, in chemistry, an imperfect metallic substance, that falls to the bottom of the crucible, in the melting of ores, or impure metallic substances.

REGULUS, in astronomy, a star of the first magnitude, in the constellation Leo, called also from its situation, *cor leonis*, or the lion's heart. See *Leo*.

REHEARSAL, in music, and the drama, an essay or experiment of some composition generally made in private, previous to its representation or performance in public, in order to render the actors and performers more perfect in their parts.

REIMBURSEMENT, in commerce, the act of repaying another the expences he has been at on our account.

REIN-DEER, in zoology, a species of the cervus, with horns ramose and cylindric, with their tops palmated. This is a large and beautiful species, not inferior to the elk in size or strength, but greatly exceeding it in form; it is of the size of a small horse, but its shape is exactly that of the red-deer. It is a native of the northern regions, there being no country so far north as not to afford it, where it is of vast use to the inhabitants, as a beast of draught.

REINFORCEMENT, in war, a fresh supply of men, arms, ammunition, &c.

REINS, in anatomy, the same with the kidneys. See *Kidneys*.

REJOINTING, in architecture, filling up the joints of the stones in buildings.

REJOINDER, in law, the defendant's answer to the plaintiff's replication or reply.

RELAPSE, a falling again into a danger, evil, or disease, from which a person has escaped.

RELATION, *Relatio*, in philosophy, the mutual respect of two things, or what each is with regard to the other.

Relations make the largest class of our perceptions, since every single object admits of almost innumerable comparisons with others: thus, if we compare one thing with another in respect of bulk, we get the ideas of greater, less, or equality; if in respect of time, of older and younger; and so for other relations, which we can pursue at pleasure, almost without end; whence it is easy to conceive, how very extensive this tribe of our perceptions

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tions must be. However, here, as well as in the other kinds of our complex ideas, we bound ourselves for the most part to such comparisons, as the exigencies of society, the wants of life, and the different professions of men render necessary; and are more or less accurate in tracing out the relations of things, according to the degree of importance they appear to have in these respects. The relations of men one to another, arising either from the ties of blood, their several ranks and places in the community, or a mutual intercourse of good offices, being of great weight and concern in the commerce of life, have in a peculiar manner engaged our attention, and are therefore very minutely described. For the same reason men have found it necessary to determine as exactly as possible, the various dependence of things, as their happiness is nearly connected with this knowledge. When we consider objects merely in respect of existence, as either giving or receiving it, we come by the relative ideas of cause and effect, which are very nearly connected with the welfare of mankind; it being evident, that the several schemes and purposes of life are all conducted upon a previous supposition, that certain known causes will have their usual regular effects, and such and such actions be attended with such and such consequences. But there are other relations of this kind, as when we also take in the additional gifts of a capacity for happiness, and the means of attaining it; which constitutes the relation of creator and creature, in the more solemn acceptation of these words. Again, when we consider the great Author of our being, not only as the creator of the universe, but also as preserving and holding it together, and presiding over the present frame of things with uncontrouled dominion; he then appears under the notion of a moral governor, to whom we are accountable for our actions, and the use we make of those powers and faculties we derive from him. And thus we may, in some measure, perceive how the mind proceeds in comparing its ideas together, and by what views it is chiefly governed in framing the compound notions of this class, by which it represents the various habitudes of things. Moral actions are nothing but relations, it being their conformity or disagreement with some rule that makes them either good or bad, or indifferent; and indeed, we ought carefully to distinguish between

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the positive idea of the action, and the reference it has to a rule.

RELATION, in geometry, the same with ratio.

RELATION, in grammar, the correspondence which words have to one another in construction.

RELATIVE, something relating to, or respecting another.

RELATIVE TERMS, in logic, words which imply a relation: such as master and servant, husband and wife, &c.

RELAY, a supply of horses placed on the road, and appointed to be ready for a traveller to change, in order to make the greater expedition.

RELAY, in tapestry, an opening left, where the colours and figures are to be changed, when the piece is finished.

RELEASE, in law, an instrument in writing by which estates, rights, titles, entries, actions, and other things are extinguished and discharged; and sometimes transferred, abridged, or enlarged; and, in general, it signifies one person's giving up or discharging the right or action he has, or claims to have, against another, or his lands, &c.

RELICS, in the Romish church, the remains of the bodies or cloaths of saints or martyrs, and the instruments by which they were put to death, devotedly preserved, in honour to their memory; kissed, revered, and carried in procession.

Relict, in law, the same with widow. See *Widow*.

RELIEVE, in a military sense, is to send off those men that are upon duty, and to bring others to take their place: thus, to relieve the guard, the trenches, &c. is to bring fresh men upon duty, and to discharge those who were upon duty.

RELIEVING-TACKLES, in naval affairs, two strong purchases passing under the bottom of a ship when she is laid on a careen, to bring her upright again, when it may be difficult to right her without them. They are passed under the keel, and fastened to the upper part of the opposite side, or the side farthest from the shore or wharf, where the careen tackles are fastened.

RELIEVO, or **RELIEF**, in sculpture, &c. the projecture, or standing out of a figure, which arises prominent from the ground or plane on which it is formed; whether that figure be cut with the chisel, moulded or cast. There are three

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kinds or degrees of relieve, viz. alto, basso, and demi-relievo. The alto-relievo, called also haut-relief or high relieve, is when the figure is formed after nature, and projects as much as the life. Basso-relievo, bas-relief, or low relieve, is when the work is raised but a little from the ground, as in medals, and the frontispieces of buildings; and particularly in the histories, fescions, foliage, and other ornaments of friezes. Demi-relievo is when one half of the figure rises from the plane. When, in a basso-relievo, there are parts that stand clear out, detached from the rest, the work is called demi-basso.

In architecture, the relieve or projection of the ornaments, ought always to be proportioned to the magnitude of the building it adorns, and to the distance at which it is to be viewed.

RELIEVO, or **RELIEF**, in painting, is the degree of boldness with which the figures seem, at a due distance, to stand out from the ground of the painting.

RELIGION, that worship and homage which is due to God, considered as our creator, preserver, and most bountiful benefactor. As our affections depend on our opinions of their objects, it seems to be among the first duties we owe to the Author of our being, to form the least imperfect, since we cannot form perfect, conceptions of his character and administration; for such conceptions will render our religion rational, and our dispositions refined. If our opinions are diminutive and distorted, our religion will be superstitious, and our temper abject. Thus, if we ascribe to the Deity that false majesty, which consists in the unbenevolent and sullen exercise of mere will or power, or suppose him to delight in the prostrations of servile fear, or as servile praise, he will be worshipped with mean adulation, and a profusion of compliments. If he be looked upon as a stern and implacable being, delighting in vengeance, he will be adored with pompous offerings, or whatever else may be thought proper to sooth and mollify him. But if we believe perfect goodness to be the character of the Supreme Being, and that he loves those who resemble him most, in this, the most amiable of his attributes, the worship paid him will be rational and sublime, and his worshippers will seek to please him by imitating that goodness which they adore. Indeed, wherever right conceptions of the Deity, and his providence, prevail,

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when he is considered as the inexhausted source of light, and love, and joy, as acting in the joint character of a father and governor, what veneration and gratitude must such conceptions, thoroughly believed, excite in the mind? how natural and delightful must it be to one whose heart is open to the perception of truth, and of every thing fair, great, and wonderful in nature, to engage in the exercises of religion, and to contemplate and adore him, who is the first fair, first great, and first wonderful; in whom wisdom, power, and goodness dwell vitally, essentially, and act in perfect concert? What grandeur is here, to fill the most enlarged capacity! what beauty, to engage the most ardent love! what a mass of wonders, in such exuberance of perfection, to astonish and delight the human mind, through an unfailling duration! When we consider the unfulfilled purity, and absolute perfection of the divine nature, and reflect on the imperfection and various blemishes of our own, and the ungrateful returns we have made to his goodness, we must sink, or be convinced we ought to sink, into the deepest humility and prostration of soul before him, and be conscious that it is our duty to repent of a temper and conduct so unworthy of our nature, and so unbecoming our obligations to its author, and to resolve and endeavour to act a wiser and a better part for the future. And if the Deity is considered as the father of mercies, who loves his creatures with infinite tenderness, and, in a particular manner, all good men; nay, who delights in goodness even in its most imperfect degrees; what resignation, what dependence, what generous confidence, what hope in God, and in his all-wise providence, must arise in the soul that is possessed of such amiable views of him. We must farther observe, that all those affections which regard the Deity as their immediate and primary object, are vital-energies of the soul, and consequently exert themselves into act, and, like all other energies, gain strength or greater activity by that exertion: it is therefore our duty, as well as highest interest, often, at stated times, and by decent and solemn acts, to adore the great original of our existence, to express our veneration and love by a devout recognition of his perfections, and to evidence our gratitude by celebrating his goodness, and thankfully acknowledging all his benefits; by proper exercises of sorrow and humiliation

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tion to confess our ingratitude and folly, to signify our dependence on God, our confidence in his goodness; and our resignation to the disposals of his providence; and this is not only in private, but in public worship, where the presence of our fellow-creatures, and the powerful contagion of the social affections, conspire to kindle and spread the devout flame with greater warmth and energy.

Religion is divided into natural and revealed. By natural religion is meant that knowledge, veneration, and love of God, and the practice of those duties to him, our fellow-creatures, and ourselves, which are discoverable by the right exercise of our rational faculties, from considering the nature and perfections of God, and our relation to him and to one another. See *Etih.*

And by revealed religion is meant, natural religion explained, enforced, and enlarged, from the express declarations of God himself, and from the mouths or pens of his prophets, &c.

Religion, in a more contracted sense, is used for that system of faith and worship which obtains in several countries of the world; and even for the various sects into which each religion is divided.

RELICUARY, a shrine or casket, wherein the relics of a dead saint are kept.

REMAINDER, in law, an estate in lands, tenements, or rents, not to be enjoyed till after a term of years, or another person's decease: thus, a person grants lands or tenements to one person, for a term of years, or for life, and the remainder to another person for life, or in fee.

REMAINDER, in mathematics, what is left after taking a lesser number out of a greater.

REMEDY, in medicine, a preparation applied either internally or externally, for the cure of a disease.

REMINISCENCE, that power of the human mind, whereby it recollects itself, or calls again into its remembrance such ideas or notions as it had really forgot: in which it differs from memory, which is a treasuring up of things in the mind, and keeping them there, without forgetting them.

REMISSION, in physics, the abatement of the power, or efficacy of any quality, in opposition to the increase of the same, which is called intension.

REMISSION, in medicine, is when a distemper abates, but does not go quite

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off before it returns again, as is common in fevers, which do not quite intermit.

REMITTANCE, in commerce, the traffic or return of money from one place to another, by bills of exchange, orders, or the like.

REMITTER, in law, where a person has two titles to lands, &c. and he comes to such lands by the last title, which proving defective, he shall be restored to, and adjudged in, by virtue of his former more ancient title, this is called remitter.

REMONSTRANCE, an expostulation or humble supplication, addressed to a king, or other superior, beseeching him to reflect on the inconveniences, or ill consequences of some order, edict, or the like.

REMORA, the suck-fish, in ichthyology, a singular fish which grows to about nine inches in length, and more than two in diameter in the largest part of the body, which is near the head, whence it becomes gradually smaller to the tail; the back is convex, the belly flat, and the sides are rounded by means of the structure of its head. This fish applies itself firmly to any solid body that it pleases; and is frequently found sticking to the bottom of ships, and often to large fish.

REMOUNT, in war. To remount the cavalry, is to furnish troopers or dragoons with fresh horses, instead of such as have been killed or disabled in the service.

RENCOUNTER, in the military art, an engagement of two little bodies or parties of forces; in which sense it stands in opposition to a pitched battle.

RENCONTRE, or RENCONTRE, in heraldry, is applied to animals, when they shew their head in front, with both eyes, &c. or when the face stands right forward, as if they came to meet the person before them.

RENDERING, in sea affairs, sliding or yielding through any place, as in the several holes, or channels of the blocks of a tackle. When all the parts yield, or draw, without interruption, they are said to render.

RENDEZVOUS, or RENDEVOUS, a place appointed to meet in, at a certain day and hour.

RENITENCY, among philosophers, that force in solid bodies, whereby they resist the impulse of other bodies, or react as much as they are acted on.

RENT, in law, a sum of money, or other

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other consideration, issuing yearly out of lands or tenements.

RENTAL, a roll in which the rents of manors are set down, for the lord's aid thereby to collect the same. It contains the lands let to each tenant, with their names, and the several rents arising.

RENVERSE, in heraldry, is when any thing is set with the head downwards, or contrary to its natural way of standing. Thus, a chevron renverse, is a chevron with the point downwards. They use also the same term when a beast is laid on its back.

RENUENTES, in anatomy, a pair of muscles of the head, thus called as being antagonists to the annuents, and serving to throw the head backwards.

RENUNCIATION, the act of renouncing, abdicating, or relinquishing any right, real or pretended.

REPAIRING, or **REPARATION**, the act of retrieving, mending, or establishing a building, or other work, damaged or gone to decay.

REPARTEE, or **REPARTY**, a ready smart reply, especially in matters of wit, humour, or raillery.

REPARTITION, a dividing or sharing a thing a second time.

REPEALING, in law, the revoking or annulling of a statute, or the like.

REPEAT, in music, a character shewing that what was last played or sung must be repeated, or gone over again.

REPELLANTS, in medicine, remedies which drive back a morbid humour into the mass of blood, from which it was unduly secreted.

REPERCUSSION, in music, a frequent repetition of the same sound.

REPERTORY, a place wherein things are regularly disposed, so as to be easily found when wanted. The indices of books are repertories, shewing where the matters sought for are treated of. Common-place books are also kinds of repertories.

REPETITION, in music, denotes reiterating, or playing over again, the same part of a composition, whether it be a whole strain, part of a strain, or double strain, &c.

REPETITION, in rhetoric, a figure which gracefully and emphatically repeats either the same word, or the same sense in different words.

REPLANTING, in gardening, the act of planting a second time. See *Planting*.

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REPLETION, in medicine a plentitude or plethora. See *Plethora*.

Repletion is more dangerous than inanition. Bleeding and diet are the great resources when a person is incommoded with a repletion. Repletion is sometimes also used where the stomach is overloaded with too much eating or drinking. The physicians hold all repletion to be prejudicial, but that of bread is of all others the worst.

REPLETION, in the canon law, is where the revenue of a benefice or benefices is sufficient to fill or occupy the whole right or title of the graduate who holds them. Where there is a repletion, the party can demand no more by virtue of his degrees. In England, where benefices are not appropriated to degrees, repletion, strictly speaking, has no place.

REPLEVIN, in law, a remedy granted on a distress, by which the first possessor has his goods restored to him again, on his giving security to the sheriff that he will pursue his action against the party distraining, and return the goods or cattle, if the taking them shall be adjudged lawful.

REPLEVISH, in law, signifies to admit one to mainprize upon surety.

REPLEVY, in law, is a tenant's bringing a writ of replevin, or replegiari facias, where his goods are taken by distress for rent; which must be done within five days after the distress, otherwise at the five days end, they are to be appraised and sold. 2 W. and M. c. 5. This word is also used for bailing a person, as in the case of a homine replegiando.

REPLICATION, in logic, the assuming or using the same term twice in the same proposition.

REPORT, the relation made upon oath, by officers or persons appointed to visit, examine, or estimate the state, expences, &c. of any thing.

REPORT, in law, a public relation of cases judiciously argued, debated, resolved, or adjudged in any of the king's courts of justice, with the causes and reasons of the same, as delivered by the judges.

REPOSE, in poetry, the same with rest and pause. See *Rest*.

REPOSE, in painting, certain masses and large assemblages of light and shade, which being well conducted, prevent the confusion of objects and figures, by engaging and fixing the eye so as it cannot attend to the other parts of the painting for

for some time; and thus leading it to consider the several groups gradually, proceeding, as it were, from stage to stage.

REPOSITORY, a store-house, or place in which things are laid up, and preserved.

REPRESENTATION, in the drama, the exhibition of a theatrical piece, together with the scenes, machines, &c.

REPRESENTATIVE, one who personates or supplies the place of another, and is invested with his right and authority.

REPRIEVE, or **REPRIVE** in law, is suspending or deferring the execution of the law upon a prisoner, for a certain time; or a warrant from the king for deferring the execution of a person condemned.

REPRISALS, a right which princes claim of taking from their enemies any thing equivalent to what they unjustly detain from them.

REPRIZE, or **REPRISE**, at sea, is a merchant-ship which, after its being taken by a corsair, privateer, or other enemy, is retaken by the opposite party. If a vessel, thus retaken, has been twenty-four hours in possession of the enemy, she is deemed a legal prize; but if it be retaken within that time, she is to be restored to the proprietor, with every thing therein, upon his allowing one third to the vessel who made the reprise. Also, if the reprise had been abandoned by the enemy, either in a tempest, or from any other cause, before she has been taken into any port, she is to be restored to the proprietor.

REPRIZES, in law, deductions or payments annually made out of a manor or lands; as rent-charges, pensions, annuities, &c.

REPROBATION, in theology, a decree by which God is supposed either from all eternity, or from the creation of the world, to consign over to eternal misery the greatest part of mankind, and to save none of the human race except those whom he made the heirs of glory by election. Casuists distinguish two kinds of reprobation, positive and negative. Positive reprobation, is that by which God is supposed to create men with a positive and absolute resolution to damn them eternally; and negative reprobation is that whereby God, though he creates all men with a sincere desire to save them, and furnishes them with all the necessary means of salvation, so that all may be saved that will, yet sees there

are several who will not do it, with the aids he shall afford them; and sees, at the same time, they would do it with certain other aids, which he sets, but will not give them.

REPTILES, in natural history, a kind of animals denominated from their creeping or advancing on the belly. Or reptiles are a genus of animals and insects, which, instead of feet, rest on one part of the body, while they advance forward with the rest. Such are earth-worms, snakes, caterpillars, &c. Indeed, most of the class of reptiles have feet, only those very small, and the legs remarkably short in proportion to the bulk of the body.

Naturalists observe a world of artful contrivance for the motion of reptiles. Thus, particularly, in the earth-worm, Dr. Willis tells us, the whole body is only a chain of annular muscles; or, as Mr. Derham says, it is only one continued spiral muscle, the orbicular fibres whereof being contracted, render each ring narrower and longer than before; by which means it is enabled, like the worm of an auger, to bore its passage into the earth. Its reptile motion might also be explained by a wire wound on a cylinder, which when slipped off, and one end extended and held fast, will bring the other near to it. So the earth-worm having shot out or extended his body (which is with a wreathing) it takes hold by these small feet it hath, and so contracts the hinder part of its body. Dr. Tyson adds, that when the fore-part of the body is stretched out, and applied to a plane at a distance, the hind part relaxing and shortening, is easily drawn towards it as a center.

Its feet are disposed in a quadruple row the whole length of the worm, with which, as with so many hooks, it fastens down sometimes this and sometimes that part of the body to the plane, and at the same time stretches out or drags after it another.

The creeping of serpents is effected after a somewhat different manner; there being a difference in their structure, in that these last have a campaign of bones articulated together.

The body here is not drawn together, but as it were complicated; part of it being applied on the rough ground, and the rest ejaculated and shot from it, which, being set on the ground in its turn, brings the other after it. The spine of the back variously wreathed has the same

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effect in leaping, as the joints in the feet of other animals; they make their leaps by means of muscles, and extend the plicæ or folds.

REPTILE is also used by some botanical writers, to signify plants which creep upon the earth, unless sustained by some other plant, prop, &c. as cucumbers, melons, the vine, &c.

REPUBLIC, commonwealth, a popular state or government; or a nation where the people have the government in their own hands.

REPUBLIC of Letters, a phrase used collectively of the whole body of the people of study and learning.

REPUDIATION, in the civil law, the act of divorcing. See *Divorce*.

REPULSION, *Repulsio*, in physics, that property in bodies, whereby, if they are placed just beyond the sphere of each other's attraction of cohesion, they mutually fly from each other.

REQUIEM, in the Romish church, a mass sung for the rest of the soul of a person deceased.

RESCRIPT, an answer delivered by an emperor, or a pope, when consulted by particular persons, on some difficult question, or point of law, to serve as a decision thereof.

RESEARCH, a scrutiny, or diligent enquiry into any thing.

RESEARCH, in music, is a kind of prelude or voluntary played on the organ, &c. wherein the performer seems to search or look out for the strains and touches of harmony, which he is to use in the regular piece to be played afterwards.

RESEARCHING, in sculpture, the repairing of a cast figure, &c. with proper tools; or the finishing it with art and exactness, so as the minutest parts may be well defined.

RESERVATION, in law, an action or clause whereby something is reserved, or secured to one's self.

Mental **RESERVATION**, a proposition, which strictly taken, and according to the natural import of the terms, is false; but, if qualified by something concealed in the mind, becomes true.

Body of **RESERVE**, or *Corps de RESERVE*, in military affairs, the third or last line of an army, drawn up for battle; so called, because they are reserved to sustain the rest, as occasion requires; and not to engage, but in case of necessity.

RESERVOIR, a place where water is

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collected and reserved, in order to be conveyed to distant places through pipes, or supply a fountain, or jet d'eau.

RESET, in law, the receiving or harbouring an outlawed person.

RESIDENCE, in the canon and common law, the abode of a person, or incumbent, upon his benefice; and his assiduity in attending on the same.

RESIDENT, a public minister, who manages the affairs of a kingdom or state, at a foreign court.

RESIDENTIARY, a canon installed into the privileges and profits of residence.

RESIDUAL FIGURE, in geometry, the figure remaining, after subtracting a lesser from a greater.

RESIDUAL ROOT, in algebra, a root composed of two parts or members connected together by the sign —. Thus $x - y$ is a residual root, so called, because its value is no more than the difference between its parts x and y .

RESIDUE, the remainder or balance of an account, debt, or obligation.

RESIGNATION, in the canon law, the surrendering a benefice into the hands of the collator, or bishop.

RESIGNEE, in law, the person to whom a thing is resigned.

RESIN, in natural history, a viscid juice oozing either spontaneously, or by incision, from several trees, as the pine, fir, &c. For the difference between resins and gums, see the article *Gum*.

Natural resins are either solid or fluid. Of the solid resins, some are used more frequently in medicine, as storax, benzoin, mastich, olibanum, elemi, lac, dragon's blood, and camphor; and others more rarely, as anime, copal, caranna, tachamahaca, laudanum, sandarach, &c. See *Storax*, *Benzoin*, &c.

The liquid resins, used in medicine, are less numerous, viz. balsam of Gilead, of Peru, of Tolu, of capivi, turpentine, liquid amber, and liquid storax. See the articles *Balsam*, *Turpentine*, &c.

RESISTENCE, or **RESISTING Force**, in philosophy, any power which acts opposite to another, so as to destroy or diminish its effect. There are various kinds of resistance, arising from the various natures and properties of the resisting bodies, and governed by various laws, as the resistance of solids, the resistance of fluids, resistance of the air, &c.

Theory of the **RESISTENCE of the Fibres of Solid Bodies**.—To conceive the idea

of this resistance, or renitency, of the parts, suppose a cylindrical body suspended vertically by one end.—Here, all its parts, being heavy, draw downwards, and tend to separate the two contiguous planes, where the body is the weakest: but all the planes resist this separation by the force wherewith they cohere, or are bound together: here, then, are two opposite powers; viz. the weight of the cylinder which tends to break it, and the force of cohesion of the parts which resists the fracture.

If the base of the cylinder be increased, without increasing its length; it is evident the resistance will be increased in the same ratio as the strength of the base: but the weight also increases in the same ratio; whence it is evident that all cylinders of the same matter and length, whatever their bases be, have an equal resistance, when vertically suspended.

If the length of the cylinder be increased without increasing the base, its weight is increased without increasing its resistance; consequently the lengthening it weakens it. To find the greatest length a cylinder of any matter may have without breaking, there needs nothing but to take any cylinder of the same matter, and fasten it to the greatest weight it will sustain before it breaks; and then see how much it must be lengthened by the addition of its weight, till it equals its former weight with the addition of a foreign weight. By this means Galileo found a copper-wire, and of consequence any other cylinder of copper, might be extended to 4801 braccio's, or fathoms of six feet each.

If one end of the cylinder were fixed horizontally into a wall, and the rest suspended thence, its weight, and resistance, would then act in a different manner; and, if it broke by the action of its weight, the rupture would be at the end fixed into the wall. A circle or plane contiguous to the wall, and parallel to the base, and consequently vertical, would be detached from the contiguous circle within the plane of the wall, and would descend. All the motion is performed on the lowest extremity of the diameter, which remains immoveable, while the upper extremity describes a quadrant of a circle, and till the circle which before was vertical becomes horizontal; i. e. till the cylinder be entirely broken.

In this fracture of the cylinder it is visible two forces have acted, and the

one has overcome the other: the weight of the cylinder, which arose from its whole mass, has overcome the resistance which arose from the largeness of the base; and as the centers of gravity are points wherein all the forces arising from the weights of the several parts of the same bodies are conceived to be united, one may conceive the weight of the whole cylinder applied in the center of gravity of its mass; i. e. in a point in the middle of its axis; and the resistance of the cylinder applied in the center of gravity of its base; i. e. in the center of the base: it being the base which resists the fracture.

Hence it follows, that the force wherewith a cylinder or any other solid body having one end thereof fixed horizontally into a wall, and the rest suspended thence, endeavours to break off at the wall, will be as the whole weight of the body drawn into the distance of its center of gravity from the wall directly, and the strength of the base of the solid next the wall inversely.

When the cylinder breaks by its own weight, all the motion is on an immoveable extremity of a diameter of the base.—This extremity, therefore, is the fixed point of a lever, whose two arms are the radius of the base, and half the axis: and, of consequence, the two opposite forces do not only act of themselves, and by their absolute force, but also by the relative force they derive from their distance with regard to the fixed point of the lever.

Hence it evidently follows, that a cylinder, e. gr. of copper, which, vertically suspended, will not break by its own weight, if less than 480 fathom long, will break with a less length in a horizontal situation; in regard the length in this latter case contributes two ways to the fracture; both as it makes it of such a weight, and as it is an arm of a lever to which the weight is applied.—Hence, also, the smaller the base is, the less length or weight will suffice to break it; both because the resistance is really less, and because it acts by a less arm of a lever.

RESISTENCE of fluids, in hydrostatics, is the force wherewith bodies, moving in fluid mediums, are impeded and retarded in their motion.

Laws of the RESISTENCE of fluid Mediums.—The resistance a body meets with in moving through a fluid, is of three kinds; the first arises from the friction,

friction of the body against the particles of the fluid; the second from their cohesion or tenacity among themselves; the third, from their inactivity or the tendency they have, in common with other bodies, to keep the places they possess.

The first, viz. that which arises from the friction of the body against the particles of the fluid, is very inconsiderable; for whatever the weight is, which presses the particles of a fluid together, the freedom, with which a body moves through it, is not sensibly diminished thereby.

The second, or that which arises from the tenacity of the particles of the fluid, is as the time the body continues passing in it: thus, suppose a body continues to move within a fluid for the space of one hour; if its motion be very quick during that time, it then moves a great way in that fluid, and consequently meets with a great deal of the fluid to resist it; but is resisted the less in each part thereof in proportion to the stay it makes there: whereas, if its motion be slow, it then moves but a little way in that time, but is resisted so much the longer in each part thereof. So that, whether the body moves fast or slow, the resistance it suffers is the same; and depends, therefore, on nothing but the time we suppose it to continue moving within the fluid. This species of resistance is also very small, except in glutinous and viscid fluids, whose parts are not easily separated.

The third species is the principal resistance that fluids give to bodies, and arises from their inactivity, or the tendency the particles of which they consist have to continue at rest. The quantity of this resistance depends on the velocity the body moves with, on a double account; for, in the first place, the number of particles put into motion by the moving body in any determinate space of time, is proportionable to the velocity wherewith the body moves; and, in the next place, the velocity with which each of them is moved, is also proportionable to the velocity of the body; this species, therefore, of resistance, is in a duplicate proportion, or as the square of the velocity, with which the body moves through the fluid.

2. Farther, the resistance a body moving in a fluid meets with from thence, may be considered with regard to the fluid; and then it will be found to be more or less, according to the density of the fluid. For by how much denser the

fluid is, so much the greater number of particles are to be put into motion by the body, in order to make its way through it.

3. The next thing to be considered is, the effects of the resistance of fluids upon bodies moving in them; that is, the retardation, which they cause in the motion of a body by their resistance, or the quantity of motion they destroy.

And this, in similar bodies of equal magnitudes, is inversely as their densities, or the quantity of matter they contain; for by how much the greater the quantity of matter in any body is, so much the more easily does it overcome the resistance it meets with from the fluid. Thus we see the resistance of the air has a much less effect in destroying the motion of an heavy body, than of a light one which has the same dimensions.

4. In similar bodies of equal densities, but different magnitudes, the retardation is inversely as their homologous sides. For the resistance bodies meet with in a fluid, as inversely as the quantities of matter they contain (by the last) that is, inversely as the cubes of their homologous sides; and it is also directly as their surfaces, because it is by them that they move the fluid out of its place; that is, directly as the squares of their homologous sides; consequently, the retardation is inversely as their homologous sides.

RESISTENCE of the Air to the motion of projectiles.—In Phil. Trans. N^o 186. there is the measure of this given very largely and accurately by Dr. Wallis: He lays down at first this lemma, that the resistance of bodies is proportional to their celerity; and then branches it out into all the particular varieties that can well be imagined; and at last, comparing different mediums one with another, he concludes their different resistances to be as their specific gravities, obstructed from the viscosity of the particles of some fluids: and also that the specifically heavier project once in motion (being equally swift with another that is lighter, &c.) will move through the same medium more strongly in proportion to its greater intensive or specific gravity.

RESOLUTION, in chemistry, &c. the reduction of a mixed body into its component parts, or first principles, by a proper analysis.

RESOLUTION, in medicine, that cotion or alteration of the crude peccant matter of any disease, either by the natural

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tural strength of the patient, or of its own accord, or by the application of remedies, whereby its bulk, figure, cohesion, &c. are so far changed, as that it ceases to be morbid, and becomes laudable. This Boerhaave observes, is of all others the most perfect cure, where it is effected without any evacuation, as supposing the matter favourable, the constitution excellent, and the medicines good.

RESOLUTION, in music, is when a canon or perpetual figure is not wrote on a line, or in one part; but all the voices that are to follow the guide or first voice, are wrote seperately either in score, that is in seperate lines or in seperate parts, with the pauses each is to observe, and in the proper tone to each.

RESOLVENTS, *Resolventia*, in medicine, remedies proper to resolve and dissipate tumours and gatherings; to soften indurations, and, by their tenuity and warmth, evacuate redundant or peccant humours through the pores. Under this class come various unguents, emplasters, &c.

RESONANCE, **RESONDING**, in music, &c. a sound returned by the air, inclosed in the bodies of stringed musical instruments, as lutes, &c. or even in the bodies of wind instruments, as flutes, &c. See *Sound and Music*.

Elliptic and parabolic vaults resound strongly, that is, they will reflect or return a sound. The mouth, and the parts thereof, as the palate, tongue, teeth, nose, and lips, M. Dodart observes, contribute nothing to the tone of the voice, but their effect is very great as to the resonance: of this we have a very sensible instance in that vulgar instrument called a Jew's-harp, or *trompe de Bearn*; for if you hold it in your hand, and strike the tongue or spring thereof, which is the method practised to sound this instrument, it yields scarce any noise; but holding the body of it between the teeth, and striking it as before, it makes a musical buzz, which is heard at a good distance, and especially the lower notes.

RESPIRATION, *respiratio*, the act of respiring, or breathing the air. What respiration is, and why it is uninterruptedly carried on without the concurrence of the mind, will appear from the following considerations of Boerhaave.

The lungs suspended in the air, which every where acts upon them, and equally presses them always, collapse, contract

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themselves into a smaller space, and become much less than when they remain in the intire thorax. This is principally performed by the contractile force of the muscular fibres, which connect the squamous segments of the bronchia. If the lungs thus contracted, are filled with air, forcibly blown through the glottis, they are so distended, as in bulk, not only to equal that which they had in the intire thorax, but even to exceed it; all which is sufficiently certain from experiments. The same thing happens if, when an access for the air through the glottis is left to the lungs, the air externally acting on the lungs, is either removed, or its pressure diminished. Hence it is obvious, that the lungs, by their proper force, have always a tendency to become less in all their parts than they are when placed in the entire thorax. For this reason, it is certain that they are in a continual state of distraction so long as a person is alive, so that they must collapse, and be diminished, whilst the whole of the animal remains in a vacuum, obtained by an exhaustion of the air in an air-pump. For there is nothing similar to a circumambient air between the external membrane of the lungs, and all the internal surface of the pleura in a sound person; nothing therefore externally compresses the lungs, except the diaphragm. There is, however, always an internal air contained in them, and freely conveyed to them through the glottis. Hence the lungs are always somewhat more distended by the internal, than they are compressed by the external air, the access of which is hindered by the diaphragm, which is so connected with the ribs and the vertebræ, that the air cannot enter the thorax in such a manner as would be requisite for an equilibrium.

Since, therefore, in inspiration, a greater quantity of air enters the lungs through the glottis, it will extend the lungs more, and overcome their natural force, so that in this action the lungs are passive; but how far they are active is only to be discovered from certain phenomena. In vital inspiration, then, especially considered in a sleeping person, first the ribs, particularly the nine superior ones, articulated at the vertebræ, and by cartilages joined to the sternum, with their arched part, rise to the clavicles, so that this motion is principally observed in the middle of the arch, whilst three, or perhaps four, inferior ribs are turned downwards, backwards, and obliquely

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liquely outwards, but in such a manner that the seventh, eighth, ninth, and tenth ribs are by their cartilaginous segments, as it were, drawn inwards. Secondly, the whole abdomen, to the very end of inspiration, is gradually rendered more tumid and pressed downwards. Thirdly, at the same time the cavity of the thorax is enlarged, as is obvious from repeated experiments.

Whilst the parts remain in this situation, the air acts upon the lungs with a force equal to that with which the thorax resists, so that the lungs will remain in a state of rest. Hence less blood will pass through them, and a smaller quantity of it will be forced into the left ventricle of the heart, and consequently less blood will be conveyed to the cerebellum and its nerves. The arterial blood will also act less upon the intercostal muscles and diaphragm, so that the causes dilating the thorax are weakened. Hence the elasticity of the cartilaginous segments again depresses the ribs, in which work they are also assisted by the muscular fibres arising from the side of the sternum within the thorax, and inserted into the bony extremities and cartilages of the true ribs. At the same time, the distracted fibres of the peritonæum and abdominal muscles restore themselves. Hence the compressed viscera thrust the relaxed diaphragm upwards into the thorax, which is by this means contracted, and the air expelled from the lungs. By this means, expiration and the action already mentioned, are performed. But in a particular manner, by these two actions, the blood is not only carried thro' the lungs, but its motion accelerated. See *Circulation*, &c.

Physicians are not agreed about the use and effects of respiration; some think that the air is insinuated into the vessels of the lungs, to give a greater fluidity and motion to the blood; others, that it conveys very subtle nitrous corpuscles thereto, which gives it the red colour; others again, believe the air serves to condense the blood, which has been heated by circulation. This is certain, that the air entering into the lungs, and all the small ramifications which surround its vessels, is broke, comminuted, and rendered more fluid, and that it is deprived of a serosity, which proceeds from the lungs by perspiration, in the form of a vapour that is visible in cold weather. It may be added, that the voice, laughter, coughing, sneezing, yawning, and suck-

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ing, depend upon respiration. Boerhaave takes the principal uses of respiration to be the further preparation of the chyle, its more accurate mixture with the blood, and its conversion into a nutritious juice, proper to repair the decays of the body. Other authors take a great use of respiration to be, by the neighbourhood of the cold nitrous air, to cool the blood coming reeking hot out of the right ventricle of the heart through the lungs, and to act as a refrigeratory: others assert one grand use of respiration to be the throwing off the fuliginous vapours of the blood, along with the expelled air; and for inspiration they assert, that it conveys a nitro-aerial ferment to the blood, to which the animal spirits, and all muscular motion, are owing. But Dr. Thurston rejects all these, as being the principal uses of respiration, and from the experiments of Dr. Croon, Dr. Hook, and others, made before the Royal Society, he shews the principal use of respiration to be that of moving, or passing the blood from the right to the left ventricle of the heart, and so to effect circulation; whence it is, that persons hanged, drowned, or strangled, so suddenly die, viz. because the circulation of the blood is stopped, and for the same reason it is, that animals die so speedily in the air-pump. This use of respiration Dr. Drake not only confirms, but carries farther, making it the true cause of the diastole of the heart, which neither Borelli, Dr. Lower, nor Mr. Cowper, had well accounted for. See *Diastole* and *Systole*.

From experiments made upon dogs, and other animals, Dr. Hales shews, that without respiration, the blood would soon turn putrid and pestilential; and indeed the only animal exempted from the necessity of respiration is a fetus. See *Fœtus*.

With regard to the force of respiration, the last mentioned author observes, that though a man, by a peculiar action of his mouth and tongue, may suck mercury twenty-two inches, and some men twenty-seven or twenty-eight, high, yet he found from experience, that by the bare inspiring action of the diaphragm and dilating thorax, he himself could scarcely raise the mercury two inches, at which time the diaphragm must act with a force equal to the weight of a cylinder of mercury, whose base is commensurate to the area of the diaphragm, and its height two inches, whereby the diaphragm must at the same time sustain a weight equal to many pounds; neither

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are its counteracting muscles, those of the abdomen, able to exert a greater force.

With regard to the quantity of moisture carried off by respiration, the doctor, from an experiment on wood ashes, estimates that quantity to be equal to seventeen grains in fifty expirations, whence there will proportionably be four hundred and eight grains evaporated, or breathed off, in twelve hundred expirations, being the number in an hour, and thence in twenty-four hours 9792 grains, or 139 pounds, which supposing the surface of the lungs to be 41635 square inches, then the quantity evaporated from that inward surface will be $\frac{1}{1074}$ th part of an inch depth.

From the violent and fatal effects of noxious vapours on the respiration and life of animals, the doctor shews how the respiration is proportionably incommoded when the air is loaded with lesser degrees of vapours, which vapours in some measure clog and lower the air's elasticity, which it best regains by having these vapours dispelled by the ventilating motion of the free open air, that is best rendered wholesome by the agitation of winds; thus what we call a close warm air, such as has been long confined in a room, without having the vapours in it carried off by communicating with the open air, is apt to give us more or less uneasiness in proportion to the quantity of vapours which are floating in it. And thus, many of those who have weak lungs, but can breathe very well in the fresh country air, are greatly incommoded in their breathing when they come into large cities, where the air is full of fuliginous vapours; and even the most robust and healthy, in changing from a city to a country air, find an exhilarating pleasure, arising from a more free and kindly inspiration, whereby the lungs being less loaded with condensing air and vapours, and thereby the vesicles more dilated with a clearer and more elastic air, a freer course is thereby given to the blood, and probably, a purer air mixed with it. See *Air*.

RESPITE, in law, &c. a delay, forbearance, or prolongation of time, granted any one for the payment of a debt, or the like.

RESPONDENT, in the schools, one who maintains a thesis, in any art or science; who is thus called, from his being to answer all the objections proposed by the opponent.

RESPONDENT, in law, a person who undertakes to answer for another;

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and also, one who binds himself as a security for another person's good behaviour.

RESPONSARY SONG, an anthem, in which the choiristers sing by turns.

RESAULT, in architecture, is the effect of a body which either projects or sinks back; that is, stands more out or in, than another, so as to be out of the line or level with it.

REST, the continuance of a body in the same place, or its continual application or contiguity to the same parts of the ambient or contiguous bodies; and, therefore is opposed to motion. See *Motion*.

Sir Isaac Newton defines true or absolute rest, to be the continuance of a body in the same part of absolute space; and relative rest to be the continuance of a body in the same part of relative space.

It is one of the laws of nature, that matter is indifferent to motion or rest.

REST, considered in a physical view, is only salutary, in so far as it is duly proportioned to the exercise; for a sedentary idle life brings on many indispositions.

REST, in poetry, a short pause of the voice in reading, being the same with the caesura, which, in Alexandrine verses, falls on the sixth syllable; but in verses of ten or eleven syllables, on the fourth.

REST, in music, the same with pause. See *Pause*.

RESTINCTION, in chemistry, the quenching a metal or mineral in some liquor, in order either to correct or exhale it, by giving it some new power or quality.

RESTITUTION, in physics, is restoring an elastic body, forcibly bent, to its natural state. See *Elasticity*.

RESTITUTION, in a moral and legal sense, is restoring a person to his right; or returning something unjustly taken or detained from him.

RESTITUTION OF MEDALS, or **RESTITUTED MEDALS**, is a term used by antiquaries, for such medals as were struck by the emperors, to retrieve the memory of their predecessors.

RESTIVE, or **RESTY**, in the manege, a stubborn, unruly, ill-broken horse, that stops, or runs back, instead of advancing forward.

RESTORATIVE, in medicine, a remedy proper for restoring and retrieving the strength and vigour both of the body and animal spirits.

RESTRICTION, among logicians, is limiting

miting a term, so as to make it signify less than it usually does.

RESTRICTING, in medicine, the same with astringent. See *Astringent*.

RESULT, what is gathered from a conference, inquiry, meditation, or the like; or the conclusion and effect thereof.

RESURRECTION, in theology, a rising again from the dead; or a person's returning to a second life, with new bodily organs, adapted to the state of its new existence. One of the greatest arguments for the truth of Christianity is drawn from the resurrection of our Saviour; the circumstances of which are handed down to us in so plain and distinct a manner, by the Evangelists, as make the evidence of this important truth amount to a demonstration. Christians generally believe, that at the day of judgment the very identical body they have now, with the same flesh, blood, and bones, will be raised from the dead. But, in opposition to this opinion, many texts of scripture have been urged, particularly the account given of this important event by St. Paul; besides several philosophical objections.

RESUSCITATION, the same with resurrection and revivification.

RETAINER, in law, a servant who does not continually dwell in the house of his master, but only attends on special occasions.

RETAINING FEE, the first fee given to a counsellor at law, in order to retain him, and prevent his pleading on the contrary side.

RETALIATION, among civilians, the act of returning like for like.

RETARDATION, in physics, the act of diminishing the velocity of a moving body. If bodies of equal bulk, but of different densities, be moved through the same resisting medium, with equal velocity, the medium will act equally on each, so that they will have equal resistances, but their motions will be unequally retarded, in proportion to their densities. Retarded motion, from gravity, is peculiar to bodies projected upwards, and this, in the same manner as a falling body is accelerated; only in the latter, the force of gravity acts in the same direction with the motion of the body; and in the former in an opposite direction. As it is the same force which augments the motion in the falling, and diminishes it in the rising body, a body will rise till it has lost all its motion; which it does in the same time wherein a body falling would have

acquired a velocity equal to that where-with the body was projected upwards.

RETE MIRABILE, in anatomy, a small plexus, or net-work of vessels in the brain, surrounding the pituitary gland. The rete mirabile is very conspicuous in brutes, but either not existent in man, or so very minute that its existence is doubted.

RETENTION is defined, by Mr. Locke, to be a faculty of the mind, whereby it keeps or retains those simple ideas it has once received, by sensation or reflection.

RETENTION is also used in medicine, &c. for the state of contraction in the solids or vascular parts of the body, which makes them hold fast their proper contents.

RETICENCY, a figure in rhetoric whereby we make oblique mention of a thing, in pretending to pass it over unmentioned.

RETICULA, or **RETICULE**, in astronomy, a contrivance for the exact measuring the quantity of eclipses. The reticule is a little frame, consisting of thirteen fine silken threads, equidistant from each other, and parallel, placed in the focus, of object glasses of telescopes; that is, in the place where the image of the luminary is painted in its full extent: of consequence, therefore, the diameter of the sun or moon is hereby seen divided into twelve equal parts or digits; so that to find the quantity of the eclipse, there is nothing to do but to number the luminous and dark parts. As a square reticule is only proper for the diameter, not for the circumference of the luminary, it is sometimes made circular, by drawing six concentric equi-distant circles. This represents the phases of the eclipse perfectly.

RETICULAR BODY, in anatomy, a very fine membrane, perforated in the manner of a net, with a multitude of foramina. It is placed immediately under the cuticle, and when that is separated from the cutis, whether by art or by accident, this adheres firmly to it, and is scarce possible to be parted from it, seeming rather to be its inner superficies than a distinct substance. In regard to this, we are to observe, first, the places in which it is found, being all those in which the sense of feeling is most acute, as in the palms of the hands, the extremities of the fingers, and on the soles of the feet. The tongue, however, is the part where it is most accurately to be observ-

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ed : it is more easily distinguishable there than any where else, and its nature and structure are most evidently seen there. Its colour in the Europeans is white, but in the Negroes, and other black nations it is black; in the tawny it is yellowish : the skin itself in both is white; and the blackness and yellowness depend altogether on the colour of this membrane. The uses of the corpus reticulare, or reticular body, are to preserve the structure of the other parts of the integuments, and keep them in their determinate form and situation. Its apertures give passages to the hairs, and lets through the papillæ and excretory ducts of the skin : it retains these in a certain and determinate order, that they cannot be removed out of their places, and has some share in preserving the softness of the papillæ, which renders them fit for the sense of feeling.

RETICULAR PLEXUS, *Plexus Reticularis*, sometimes denotes the chloroides, which is thus called because its fibres are interwoven like a net.

RETIFORMIS LACIS, in anatomy, the same with the rete mirabile. See *Rete*.

RETINA, in anatomy, the expansion of the optic nerve on the internal surface of the eye, whereupon the images of objects being painted, are impressed, and by that means conveyed to the common sensory in the brain, where the mind views and contemplates their ideas.

REINUE, the attendants or followers of a prince or person of quality, chiefly in a journey.

RETIRADE, in fortification, a kind of retrenchment made in the body of a bastion, or other work, which is to be disputed, inch by inch, after the defences are dismantled. It usually consists of two faces, which make a re-entering angle. When a breach is made in a bastion, the enemy may also make a retirade or new fortification behind it.

RETORT, in chemistry, a kind of crooked matrass, or a round-bellied vessel, either of earth or glass; with a slender crooked beak, to which the recipient is to be placed. See *Distillation*.

RETRACTION, the act of drawing back, or unsaying what a person had said before. Among anatomists, retraction frequently signifies the contraction or shortening of any part.

RETRACIS, among horsemen, pricks in a horse's feet, arising from the fault of the farrier in driving nails that are

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weak, or in driving them ill pointed, or otherwise amiss.

RETRAHENS Auriculum, in anatomy, a muscle of the external ear, consisting of a parcel of fleshy fibres, which in some bodies are divided into distinct muscles, arising from the os temporale, and fixed to the hind-part of the concha. But these muscles are so small in men that the auricle is seldom moveable at all.

REIREAT, in war, the retiring or moving back again of any army or part thereof.

RETREAT, in naval affairs, the order or disposition in which a squadron of ships retires from a superior or victorious enemy. When a fleet is obliged to retreat in sight of an enemy, the best way to secure it will be by sailing in a kind of half moon; the admiral's ship forming the obtuse angle, his fleet being equally divided, one half on the star-board and the other half on the lar-board side; keeping the fire-ships, transports, &c. in the middle. This manner of ranging a fleet seems the most advisable, because the enemy can never approach those who endeavour to escape without exposing themselves, at the same time, to the fire of the admiral, and that of his seconds. If the commander in chief thinks this form gives too great an extent to his fleet, he may easily close his wings or quarters. The most natural course in this form of sailing is to steer away before the wind; but, if necessary, the ships may bear away large upon either tack, or even keep close upon a wind.

RETREAT, or **RELAY**, in masonry, a little recess or diminution of the thickness of a wall, rampart, &c. in proportion as it is raised. The retreat, properly, is the diminution of a wall without side, or the contraction of its upper courses more than the foundation. Where the foundation is very long, they usually make two or three retreats.

RETRENCHMENT literally signifies something cut off or taken from a thing; in which sense it is the same with subtraction, diminution, &c.

RETRENCHMENT, in the art of war, any kind of work raised to cover a post, and fortify it against the enemy, such as fascines loaded with earth, gabions, barrels of earth, sand-bags, and generally all things that can cover the men and stop the enemy. But retrenchment is more particularly applicable to a foss bordered with a parapet; and a post

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post fortified thus is called post retrench-
ed, or strong post.

RETRIBUTION, a handsome present, gratuity, or acknowledgment, given instead of a formal salary, or hire, to persons employed in affairs that do not so immediately fall under estimation, nor within the ordinary commerce in money.

RETRIEVE, to recover, get again, or repair a thing lost or damaged.

RETROCESSION, the act of going backwards; more usually called retrogression, or retrogradation.

RETROGRADATION, or **RETROGRESSION**, the act or effect of a thing moving backwards. The retrograde motion of the planets is an apparent motion, whereby they seem, to an observer placed on the earth, to move backwards, or contrary to the signs. The retrograde motion of the nodes, is a motion of the line of nodes, whereby it continually shifts its situation from east to west, contrary to the order of the signs; completing its retrograde circulation in the compass of about nineteen years, after which time either of the nodes, having receded from any point of the ecliptic, returns to the same again.

RETROGRESSION of Curves, their bending or turning backwards.

RETROMINGENTS, in natural history, a class or division of animals, whose characteristic it is that they stale, or make water backwards, both male and female.

RETURN, in law, is used in divers senses. 1. Return of writs by sheriffs and bailiffs is a certificate made by them to the court, of what they have done in relation to the execution of the writ directed to them. This is wrote on the back of the writ by the officer, who thus sends the writ back to the court from whence it issued, in order that it may be filed. 2. Return of a commission, is a certificate or answer sent to the court from whence the commission issues, concerning what has been done by the commissioners. 3. Returns, or days in bank, are certain days in each term, appointed for the return of writs, &c.

RETURN, in building, is a side or part that falls away from the fore-side of any straight work.

RETURNS of a Trench, in fortification, the turnings and windings which form the lines of a trench.

RETURNS of a Mine, in fortification, the windings of the gallery.

REVE, REEVE, or GREVE, the bai-

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liff of a franchise, or manor, thus called, especially in the west of England. Hence shire-reve, sheriff, port-greve, &c.

REVEILLE, a beat of drum, about break of day, to give notice that it is time for the soldiers to arise, and that the centries are to forswear challenging.

REVELATION, the act of revealing, or making a thing public that was before unknown: it is also used for the discoveries made by God to his prophets, and by them to the world; and more particularly for the books of the Old and New Testament. The principal tests of the truth of any revelation are, its being worthy of God, and consistent with his known attributes; its being agreeable to the clear dictates of unprejudiced reason, and its having a tendency to refine, purify, and exalt the mind of man to an imitation of the Deity in his moral perfections. Mr. Locke, in laying down the distinct provinces of reason and faith, observes, 1. That the same truths may be discovered by revelation, which are discoverable to us by reason. 2. That no revelation can be admitted against the clear evidence of reason. 3. That there are many things of which we have but imperfect notions, or none at all; and others, of whose past, present, or future existence, by the natural use of our faculties, we cannot have the least knowledge: and these, being beyond the discovery of our faculties, and above reason, when revealed, become the proper object of our faith. He then adds, that our reason is not injured or disturbed, but assisted and improved by new discoveries of truth coming from the fountain of knowledge.

REVELS, entertainments of dancing, masking, acting comedies, farces, &c. anciently very frequent in the inns of court, and in noblemen's houses, but now much disused. The officer who has the direction of the revels at court is called the master of the revels.

REVENUE, the annual income a person receives from the rent of his lands, houses, interest of money in the stocks, &c.

REVERBERATION, in physics, the act of a body repelling or reflecting another after its impinging thereon.

REVERBERATION, in chemistry, a kind of circulation of the flame by means of a reverberatory, or the return of the flame from the top of the furnace back to the bottom, chiefly used in calcinations.

REVERBERATORY, or **REVERBERATING FURNACE**, a chemical furnace

furnace built close all around, and covered at the top with a capital of brick or tiles, so as not to give any vent to the heat or flame, but to determine it to reverberate or turn back from the brick-work with new force upon the matter placed at bottom. When the fire has no vent or passage a-top, it is a whole reverberatory. When the middle of the capital is open, and only the sides close, so that there is only a half circulation of the flame, it is called an half reverberatory. The reverberatory furnace is chiefly used in the fusion and calcination of metals and minerals, and on other occasions where the most intense heat is required, as in assaying, &c. whence it is also called the melting furnace, and assaying furnace.

REVEREND, a title of respect given to ecclesiastics.

REVERIE, the same with delirium, raving, or distraction. It is used also for any ridiculous, extravagant imagination, action, or proposition, a chimera, or vision. But the most ordinary use of the word, among English writers, is for a deep disorderly musing or meditation.

REVERSE, in law, &c. To reverse signifies to undo, repeal, or make void.

REVERSE of a Medal, Coin, &c. the back-side, in opposition to the head or principal figure.

REVERSE, in fencing, a back stroke.

REVERSED, in heraldry, a thing turned backwards, or upside down.

REVERSION, in law, is defined to be returning of lands, &c. into the possession of the donor, or his heirs. Reversion, in the law of England, has two significations; the one of which is an estate left, which continues during a particular estate in being; and the other is the returning of the land, &c. after the particular estate is ended: and it is further said, to be an interest in lands, when the possession of it fails, or where the estate which was for a time parted with, returns to the grantors, or their heirs. But, according to the usual definition of a reversion, it is the residue of an estate left in the grantor, after a particular estate granted away ceases, continuing in the grantor of such an estate. The difference between a remainder and a reversion consists in this, that the remainder may belong to any man except the grantor; whereas the reversion returns to him who conveyed the lands, &c. See *Interest*.

REVERSION of Series, in algebra, a

kind of reversed operation of infinite series.

REVIEW, in war, the appearance of an army, or part of an army, in order of battle, and their being viewed by the general, that he may know the condition of the troops, see that they are complete, and be a witness of the expertness with which they perform their evolutions and other exercises.

REVISE, among printers, a second or third proof of a sheet to be printed, taken off in order to be compared with the last proof, to see whether all the mistakes marked in it are corrected.

REVOLUTION, in politics, a grand change or turn in government.

In geometry, the revolution of any figure, is its motion quite round a fixed line, as an axis.

The revolution of a planet, or comet, round the sun is nothing but its course from any point of its orbit till its return to the same.

• REVULSION, in medicine, turning a flux of humours from one part to another, by bleeding, cupping, friction, sinapisms, blisters, fomentations, bathings, issues, setons, strong purging of the bowels, &c. Dr. Van Swieten, in his Commentaries upon the Aphorisms of Boerhaave, observes, that the use of revulsions in diseases, is confirmed by daily experience as well as by reason; for so soon as the resistance to the blood's motion is either diminished or totally removed in any part of the body, it immediately flows into that part with a greater velocity.

RHABDOMANCY, a species of divination performed by means of rods. See *Divination*.

RHACHITIS, in medicine, the rickets. See *Rickets*.

RHAGADES, in medicine, denotes chaps or clefts in any part of the body; arising either from an acidity of the parts or acrimony of the humours; in both which cases, cooling and emollient applications are proper.

RHAPONTICUM is the name for the root of the rheum.

RHAPSODI, *see* *London*, in antiquity, persons who made a business of singing pieces of Homer's poems. Cuper informs us, that the Rhapsodi were clothed in red when they sung the *Iliad*, and in blue when they sung the *Odyssæ*. They performed on the theatres, and sometimes strove for prizes in contests of poetry, singing, &c. but there seems to

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have been other Rhapsodi of more antiquity than these people, who composed heroic poems or songs in praise of heroes and great men, and sung their own compositions from town to town for a livelihood, of which profession Homer himself is said to be.

RHAPSODY, in antiquity, a discourse in verse sung or rehearsed by a Rhapsodist. Others will have rhapsody to signify a collection of verses, especially those of Homer, which having been a long time dispersed in pieces and fragments, were at length by Pisistratus's order, digested into books called rhapsodies. Hence, among moderns, rhapsody is also used for an assemblage of passages, thoughts, and authorities raked together from divers authors, to compose some new piece.

RHETORIC, the art of speaking copiously on any subject with all the advantage of beauty and force. Lord Bacon defines rhetoric very philosophically, to be the art of applying and addressing the dictates of reason to the fancy, and of recommending them there so as to affect the will and desires. The end of rhetoric, the same author observes, is to fill the imagination with ideas and images which may assist nature without oppressing it. Vossius defines rhetoric, the faculty of discovering what every subject affords of use for persuasion. Hence, as every author must invent arguments to make his subject prevail, dispose those arguments, thus found out, in their proper places, and give them the embellishments of language proper to the subject; and if this discourse be intended to be delivered in public, utter them with that decency and force which may strike the hearer; rhetoric becomes divided into four parts, invention, disposition, elocution, and pronunciation.

Rhetoric and oratory differ from each other as the theory from the practice; the rhetorician being he who describes the rules of eloquence, and the orator he who uses them to advantage. They are nevertheless generally used indifferently for each other.

RHEUM, a thin serous humour, occasionally issuing out of the glands about the mouth and throat.

RHEUM, the RHAPHONTIC PLANT, in botany, a genus of plants, the corolla whereof consists of a single petal, which is narrow at the base, and imperious: the limb is divided into six obtuse segments, alternately smaller: there is no

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pericarpium: the seed is single, large, triquetrous, acute, and surrounded with membranaceous rims.

RHEUMATISM, in medicine, a distemper that most frequently happens in spring or autumn, when there is a remarkable change of air from hot to cold, and from cold to hot, when the wind suddenly shifts to any opposite point. It begins, according to Sydenham, with a shivering and other symptoms of a fever, and in a day or two's time, or sometimes sooner, a vehement pain seizes one or more of the limbs, raging sometimes in one place and sometimes in another, especially in the arms, wrists, shoulders, and knees: very often there is a redness and swelling, and the fever gradually goes off while the pain remains. This distemper often runs out into a great length, continuing sometimes for some months or years, not perpetually with the same violence. But coming and going, and from time to time renewing its paroxysms. It chiefly attacks persons in the flower of their age, after violent exercise, or a great heat of the body from any other cause, and then being too suddenly cooled. Its proximate cause Boerhaave takes to be an inflammation of the lymphatic arteries of the membranes near the ligaments of the joints, but not so violent as to bring on a suppuration.

This disease is nearly a-kin to the gout and scurvy, and the blood is like that of those afflicted with the pleurisy. The pain is exasperated upon the least motion: it sometimes attacks the loins and coxendix, and sometimes the brain, lungs, and viscera: when it seizes the loins it is then called lumbago; in this case, Sydenham observes that there is a most violent pain in the small of the back, which sometimes extends to the os sacrum, and is like a fit of the gravel, only the patient does not vomit. If this disease is unskilfully treated, it may continue several months or years, but not always with the same violence, but by fits. If it continues and increases, it may cause a stiff joint, which will scarce yield to any remedy. Sydenham directs to take away ten ounces of blood on the side affected; this must be repeated three or four times, or oftener, once every other or every third day, according as the strength of the patient will bear. The diet must be very thin, and an emulsion of the four cold seeds may be given; as also a poultice of white bread and milk, tinged with a little saffron, may

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may be laid to the part affected; a clyster of milk and sugar may be injected on those days the bleeding is omitted. If the patient cannot bear frequent bleeding, after the second or third time give the common purging potion every other day, and an ounce of diacodium at night, till he recovers.

In an incipient rheumatism of the shoulders, Hoffman says that nothing is better than a blister laid between the scapula; but if it happens to the plethoric, cupping, with scarification in the lower parts, repeated every month, does signal service. The same physician thinks it may be proper to chew rhubarb, from two scruples to a dram, with raisins or currants, two or three times a week.

The spirit of hartshorn and the balsam of guaiacum, given in the quantity of twenty or thirty drops, three or four times a day, Dr. Shaw says, is of great service: but he thinks nothing better than a decoction of the sudorific woods, to the quantity of a quart a day, for a month or six weeks together. This last, when assisted with crude antimony and mercurius dulcis, Hoffman recommends in the venereal rheumatism, which often arises from the remains of a lues venerea contained in the mass of blood. In a scorbutic rheumatism; or that arising from the scurvy, Sydenham directs the patient to take the scorbutic electuary and water, if he cannot bear any kind of evacuation.

He observes that young persons who live temperately may be cured by a simple refrigerating diet, and moderate nourishing, with as much certainty as by repeated bleeding: for instance, let the patient live four days upon whey alone; and after that white-bread may be allowed for dinner, and on the last day of his illness he may be allowed it for supper. When the symptoms cease he may have boiled chickens, or any thing of easy digestion, but every third day he must live upon whey only, till his strength returns. Boerhaave's method of cure is to the same effect, only he advises warm baths and strong blisters to be laid upon the part affected, nay even cauteries themselves: but Hoffman observes that great caution should be used with regard to topics, for if the patient's constitution is sanguineous they should all be avoided, and the part covered carefully with the bed cloaths; but if there is a thick, cold, stagnating humour in the part, and a sense of cold, with a

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stricture of the pores, then frictions may be used with rough warm cloths, and afterwards cupping with scarifications. If the part becomes stiff and inflexible, with a numbness, which is called a paresis, then take human or canine axungia, two ounces; balsam of Peru, and oil of cloves, each two drams; with which make a liniment for the part: this has been known to have a wonderful effect. Arbuthnot says that cream of tartar in water-gruel, taken for several days, will abate the pains and swellings considerably by its acidity, correcting the alkaline salts of the blood.

Cheyne says, that the hot and inflammatory rheumatisms have all the symptoms of the gout, and like it, change from place to place, and by over violent evacuations may be translated upon the noble organs.

RHEXIS, among oculists, denotes a rupture of the cornea of the eye.

* RHINE, a large river of Europe, rising in Mount Gothard, in the country of the Grisons, and in the Upper League. After it has crossed part of Germany and the Netherlands, it divides into two branches, one of which preserves the name of the Rhine, and proceeds to lose itself in the sands below Leyden. The other takes the name of the Lech, and falls into the Merwe, five miles north-west of Dordrecht.

* RHINE (the circle of the Upper) one of the nine provinces of the empire of Germany, and is divided into two parts, the Upper and the Lower. The Lower comprehends the territories of the landgraves of Hesse-Cassel, Darmstadt, and Rheinfeld, the counties of Nassau, Solms, Hanaw, Isenburg, Seine, Wied, Wigenstein, Hatzfeld, and Waldeck, together with the abbeys of Fulda and Hirschfeld, and the imperial towns of Francfort, Fridburg, and Wetzlaw. The Upper part of the circle of the Upper Rhine lies to the west of that river, and comprehends the bishopricks of Basle, Strasburg, Spire, and Worms, with the duchy of Deuxponts, the counties of Sponheim, Sarbruck, Falkenstein, and Linenge, and the imperial towns of Worms and Spire, Alsace, Lorrain, and Savoy, were formerly in the circle, but now they do not belong to Germany.

* RHINE (the Lower Circle of the) one of the nine provinces which now compose the empire of Germany. It extends from the circle of Suabia, which bound

it on the south, to that of Westphalia, which lies to the north; to the east is the lower part of the circle of the Upper Rhine, and that of Franconia; and to the west, the upper part of the circle of the Upper Rhine, Lorraine, and Luxemburg. It contains the electorates of the palatinate of Mentz, Treves or Triers, and Cologne.

RHINE LAND *Rod*, in fortification, &c. a measure of two fathoms, or twelve feet, used by the Dutch and German engineers, &c.

RHINOCEROS, in zoology, the name of a genus of quadrupeds; so called from an horn growing on their nose.

Of this genus there are only two known species. 1. The rhinoceros with only one horn on its nose; and, 2. The rhinoceros with two horns.

In the year 1739 we had a young rhinoceros shewn in England, of which Dr. Parton has given a very accurate account in the Philosophical Transactions. The creature fed on rice, sugar, and hay; his keeper used to mix the rice and sugar in the following manner: seven pounds of rice and three pounds of sugar made the provision for one day; he eat this at three meals: and besides this, he eat about a truss of hay every week, and a large quantity of greens that were brought to him, at different times, and of which he seemed more fond than of dried food. He drank often, and always was observed to swallow a large quantity of water at a time. He appeared very peaceable in his temper, and bore to be handled on any part of his body with great patience, except when he was hungry; but he was then always outrageous, as also when he was struck. His most violent passions, even on the last occasion, were however always immediately appeased by giving him victuals. Notwithstanding the lumpy aspect, and heavy make of this creature, he would jump about very nimbly in his fits of passion, and often leap to a great height; and one common mark of his fury was the striking his head against the walls, or any thing else that was in the way, and this he would do with terrible violence. He was very apt to fall into these passions in a morning before his rice and sugar were given him, and from the whole he appeared quite untractable, and seemed able, in his passions, to have run so fast, as that a man on foot could not have escaped him. This creature was two years old, and

did not exceed a young heifer in height, but was remarkably broad and thick. His head was very large; and the hinder part of it, near the ears, remarkably elevated above the rest of the face, which was flat, and sunk down in a remarkable manner in the middle, rising again towards the origin of the horn, but in a much smaller degree. The horn stands upon the nose of the animal as upon a sort of hill; and when the skeleton of the head is seen, that part of the skull on which the horn is fixed, is found to rise into a blunt cone, to answer to a cavity in the basis of the horn, which is very hard and solid; in other respects having no manner of hollow or core, like those of other quadrupeds. The horn in this young animal did not rise above an inch high from its tough basis, and was black and smooth at the top; but ragged downwards; and the determination of its growth is backwards, not straight up; this is very evidently seen in the horns of old rhinoceroses, which are always curved in a considerable degree that way. If we consider the proportion of this animal's size to the length of its horn, and thence carry the proportion to that between the large horns we see in the museums of the curious, we must suppose the animal of a very stupendous size, when at its full growth. *Phil. Transf.* N^o. 470.

The skin of the rhinoceros is thick, and seems almost impenetrable; it feels like a piece of board of half an inch thick. It is covered in all parts, more or less, with a sort of incrustations resembling scales. These are small on the neck, and largest of all in the shoulders and hips; between the folds of this thick skin, the cuticle, which is left bare, is soft, and easily penetrable. The scabby incrustations of the skin have been called scales, by some writers; but this is a very wrong term, for they have nothing of the nature of scales, nor any thing of regularity in them.

RHODIUM, or **ROSEWOOD**, the wood or root of a tree, of which we have no certain account; brought from the Canary islands, in long crooked pieces, full of knots, externally of a whitish colour, internally of a deep yellow, with a reddish cast. The largest, smoothest, straightest, heaviest, and deepest-coloured pieces should be chosen; and the small, thin, pale, light ones rejected.

RHOMBOIDES, in geometry, a quadrilateral

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drilateral figure, whose opposite sides and angles are equal, but is neither equilateral nor equiangular.

RHOMBOIDES, in anatomy, a thin, broad, and obliquely square fleshy muscle, situated between the basis of the scapula and the spina dorsi; so called from its figure. Its general use is to draw backward and upward, the subspinal portion of the basis scapulae.

RHOMBUS, in geometry, an oblique-angled parallelogram, or quadrilateral figure, whose sides are equal and parallel, but the angles unequal, two of the opposite ones being obtuse, and the other acute.

* **RHONE**, a large river of France, which rises in Mount Fourche, on the confines of Switzerland, and runs cross the Valais, the lake, and the city of Geneva; after which it separates Bresse from Savoy and Dauphiny, as far as Lyons, where, turning directly south, it enters Lyonnois and Languedoc, which are to the west, and Dauphiny with Provence, which lie to the east, and then it proceeds to discharge itself into the Mediterranean Sea, by several mouths. It receives several rivers in its passage, and washes besides several other towns, Sion, Geneva, and Seyssil, where it begins to be navigable for boats; from thence it passes Bely, Lyons, Vienne, Tournon, Valence, Viers, Pont St. Esprit, Avignon, Beaucaire, Tarascon, and Arles.

RHUBARB, *Rhabarbarum*, a plant with large dock-like leaves, among which arises a single thick stalk, bearing loose clusters of naked monopetalous bell-shaped white flowers; each of which contains nine stamina, of which the docks, strictly so called, have but six, and is followed by a triangular seed surrounded about the edges with a leafy margin. It is perennial. It is a native of China and Siberia, and has lately been raised in some of our gardens, where it is found to grow with vigour in the open ground.

Two sorts of rhubarb roots are met with in the shops. The first is imported from Turkey and Russia, in roundish pieces, freed from the bark, with a hole through the middle of each, externally of a yellow colour, internally variegated with lively reddish streaks. The other, which is less esteemed, comes immediately from the East Indies, in longish pieces, harder, heavier, and more compact than the foregoing. The first sort, unless kept very dry, is apt to grow mouldy

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and worm eaten: the second is less subject to these inconveniencies. Some of the more industrious artists are said to fill up the worm holes with certain mixtures, and to colour the outside of the damaged pieces with powder of the finer sorts of rhubarb, and sometimes with cheaper materials. The marks of the goodness of rhubarb are, the liveliness of its colour when cut; its being firm and solid, but not stinty or hard; its being easily pulverable, and appearing when powdered of a fine bright yellow colour; its imparting to the spittle, on being chewed, a deep saffron tinge, and not proving slimy or mucilaginous in the mouth. Its taste is subacid, bitterish, and somewhat styptic; the smell, lightly aromatic. Rhubarb is a mild cathartic, and commonly looked upon as one of the safest and most innocent of the substances of this class. Besides its purgative virtue, it has a mild astringent one, discoverable by the taste, and by its striking an ink blackness with chalybeate solutions: hence it is found to strengthen the tone of the stomach and intestines, to leave the belly costive, and to be one of the most useful purgatives in diarrheas, dysenteries, and all disorders proceeding from a debility and laxity of the fibres: it is frequently indeed given with a view rather to this stomachic corroborating virtue, than to its producing any considerable evacuation. It tinges the urine of a light yellow colour. Rhubarb in substance purges more effectually than any preparation of it: the dose is from a scruple to a dram. By roasting it with a gentle heat, till it becomes easily friable, its cathartic power is diminished, and its astringency supposed to be increased. In its habitude to menstrua, it differs remarkably from most of the other cathartic drugs, its purgative virtue being extracted far more perfectly by water than by rectified spirit: the root remaining after the action of water is almost, if not wholly, inactive; whereas, after repeated digestion in spirit, it proves still very considerably purgative: the colour of both tinctures is a fine deep yellow, that of the spirituous palest; when the rhubarb has given out to spirit all that this menstruum can extract, it still imparts a deep colour, as well as a purgative impregnation, to water. The watery infusion, in being inspissated by a gentle heat, has its virtue so much diminished, that a dram of the extract is said to have scarcely any greater effect than

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than a scruple of the root in substance : the spirituous tincture loses less ; half a dram of this extract proving moderately purgative, though scarcely more so than an equal quantity of the powder. The spirituous extract dissolves almost wholly in water ; and hence the tincture does not, like the spirituous infusions of most other vegetables, turn milky on being mixed with aqueous liquors : of the watery extract, scarce above one fourth is dissolved by rectified spirit, and the part that does not dissolve proves more purgative than that which does. Tinctures of this root are drawn in the shops with proof spirit and with mountain wine, in the proportion of an ounce of the rhubarb to a pint of the menstruum. These preparations, used chiefly as mildly laxative corroborants, in weakness of the stomach, indigestion, diarrhoeas, cholicky, and other like complaints, are commonly aromatized with a little cardamon seeds and saffron, as two drams of the former and one of the latter to the above quantity of the root. For some purposes, a tincture is drawn from the rhubarb and cardamon seeds with proof spirit, and two ounces of white sugar-candy dissolved in the strained liquor. For others, instead of sweets and aromatics, gentian and snake root are joined, in the proportion of a dram and a half of the former and a dram of the latter, with the addition of a scruple of cochineal as a colouring ingredient : this last tincture is, in many cases, an useful assistant to the Peruvian bark in the cure of intermittents. The Turkey rhubarb is, among us, universally preferred to the East India sort, though this last appears to be for some purposes at least equal to the other. It is manifestly more astringent, but has somewhat less of an aromatic flavour. Tinctures made from both with equal quantities of rectified spirit, have nearly the same taste : on drawing off the menstrua, the extract left by the tincture of the East India rhubarb proves in taste considerable stronger than the other. Both sorts appear to be the produce of the same climate, and the roots of the same species of plant, taken up probably at a different season, or cured in a different manner.

RHUMB, in navigation, a vertical circle of any place, or the intersection of such a circle with the horizon. Therefore, rhumbs coincide with the points of the world, or of the horizon : and hence

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navigators distinguish the rhumbs by the same name as the points and winds.

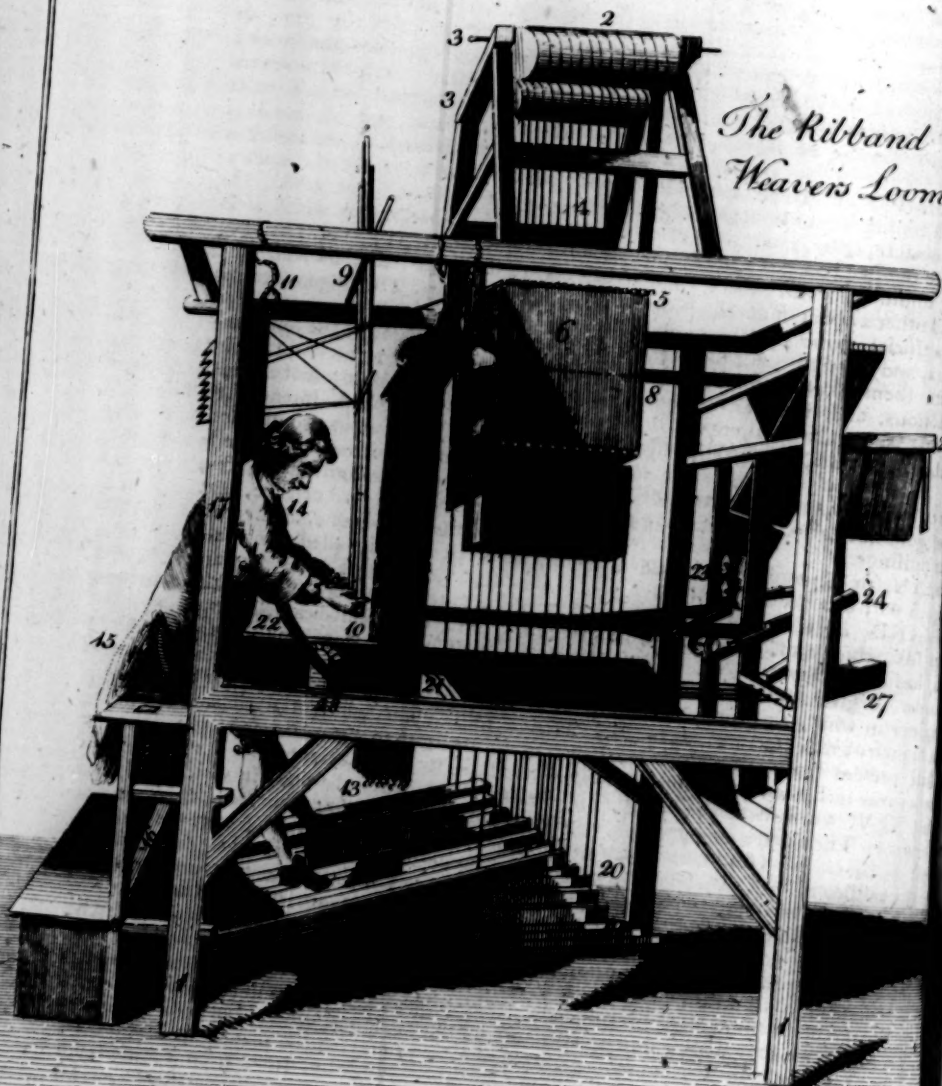
RHUMB LINE, in navigation, the line which a ship describes, keeping in the same collateral point or rhumb.

RHYME, in poetry, a similitude of sound between the last syllable or syllables of two verses. Rhymes may be distinguished into whole or perfect, and half or imperfect rhymes. The first is where there is a similitude of sound without any difference, the latter where there is a difference either in the pronunciation or orthography. The French distinguish their rhymes into masculine and feminine. The feminine is where the last syllable of the rhyme ends with an *e* mute, as in *deux, belle, &c.* The masculine rhymes are those of all other words. Rhyme is a modern invention, the product of a Gothic age. Milton calls it the modern bondage, yet some authors will have it that the English, French, &c. borrow their rhyme from the Greeks and Latins, who affected a certain cadence or period ending in a consonant. This affectation increased, as the Latin tongue declined : so that among the Latin writers scarce any thing is more common than rhyming periods. In the twelfth century, particularly, Latin rhyme was much in vogue, under the name of Leonine verses. The French, and from them the English, retain this cadence of rhyme, which seemed more agreeable than the measured verses of the Greek and Roman poets. Since the restoration of learning in the sixteenth century, attempts have been made to banish rhyme from the modern poetry, and to settle the English and French verses on the footing of the ancient Greek and Latin ones, by fixing the quantity of the syllables, and trusting wholly to those and the numbers, or measure. Milton, Phillips, Addison, Thomson, and some others have excelled in this sort of blank verse. The French attempted the same, but have not succeeded ; this kind of measure being inconsistent with the genius of the French tongue, which cannot vary the arrangement of the words, or change their situation, as this kind of verse requires. Nor indeed can any of the modern tongues equal the ancient in this respect ; yet none more than the English, nor less than the French. *Discrepant.*

RHYTHM, or **RHYTHMUS** is music, the variety in the movement as to the



The Ribband Weavers Loom.



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the quickness or slowness, length or shortness of the notes. Or rhythmus may be defined, more generally, the proportion which the parts of a motion have to each other. Aristides, among the ancient musicians, applies the word rhythmus three ways, viz. either to immoveable bodies, when the parts are rightly proportioned to each other, as a well-made statue, &c. or to things that move regularly, as handsome walking, in dancing, in the dumb shews of pantomimes, &c. or, thirdly, to the motion of sound or voice, in which the rhythmus consists of long and short syllables, or notes, joined together in some kind or order, so as their cadence on the ear may be agreeable.

RHYTHMICA, in the ancient music, that which considered the motions, regulated the measure, order, mixture, &c. so as to excite the passions, keep them up, augment, diminish, or allay them. Aristides, and other ancient musical writers, divided artificial music into harmonica, rhythmica, and metrica. But the rhythmica with them likewise comprehended dumb motions, and, in effect, all rhythmical, that is, regular motion.

RIAL, or **RYAL**, a Spanish silver coin.

RIAL, or **ROYAL**, the name of a piece of gold anciently current among us for ten shillings.

RIBBAN, or **RIBBON**, in heraldry, the eighth part of a bend.

RIBBAND, or **RIBBON**, a narrow sort of silk, chiefly used for head-ornaments, badges of chivalry, &c.

In order to give our readers an idea of the manner in which this curious and valuable branch of manufacture is managed, we shall present him with a view of the ribbon-weaver in his loom, as represented in Plate XLV. where 1. is the frame of the loom. 2. The castle, containing forty-eight pullies. 3. The branches, on which the pullies turn. 4. The tires, or the riding cords, which run on the pullies, and pull up the high-lisses. 5. The list-sticks, to which the high-lisses are tied. 6. The high-lisses, or lists, are a number of long threads, with platines, or plate-leads at the bottom; and ringlets, or loops, about their middle, through which the cords or cross threads of the ground-harness ride. 7. The plate-leads, or platines, are flat pieces of lead, of about six inches long, and three or four broad at the top, but round at the bottom; some use black slates instead of

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them: their use is to pull down those lisses, which the workman had raised by the treddle, after his foot is taken off.

8. The branches or cords of the ground-harness, which go through the loops in the middle of the high-lisses: on the well-ordering of these cords chiefly depends the art of ribbon-weaving, because it is by means of this contrivance that the weaver draws in the thread of silk that makes the flower, and rejects or excludes the rest. 9. The batton; this is the wooden frame that holds the reed, or shuttle, and beats or closes the work: where observe, that the ribbon-weaver does not beat his work; but as soon as the shuttle is passed, and his hand is taken away, the batton is forced by a spring from the top, to beat the work close. 10. The shuttle, or reed. 11. The spring of the batton, by which it is made to close the work. 12. The long harness are the front-reeds, by which the figure is raised. 13. The linguas are the long pieces of round or square lead, tied to the end of each thread of the long harness, to keep them tight. 14. The broad piece of wood, about a foot square, leaning somewhat forward, intended to ease the weaver, as he stoops to his shuttle; it is fixed in the middle of the breast-beam. Some weavers, instead of this, have a contrivance of a cord or rope, that is fastened to the front-frame, and comes across his breast; this is called a stop-fall. 15. The seat-bench; this leans forward very much. 16. The foot-step to the treddles. 17. The breast-beam, being a cross-bar that passes from one of the standards to the other, so as to front the workman's breast; to this breast-bar is fixed a roll, upon which the ribband passes in its way to be rolled upon the roller, that turns a little below. 18. The clamps, or pieces of wood, in which the broaches, that confine the treddles, rest. 19. The treddles are long narrow pieces of wood, to the ends of which the cords that move the lisses are fastened. 20. The treddle-cords are only distinguished from the riding-cords by a board full of holes, which divide them, in order to prevent the plate-leads, which are tied to the high-lisses, from pulling them too high, when the workman's foot is off the treddle; which stop is made by a knot in the treddle-cord, too big to be forced through the hole in the board. 21. The lames are two pieces of thin narrow boards, only used in plain works, and then to supply the place of the long-harness.

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harness. 22. The knee-roll, by which the weaver rolls up his ribbon, as he sees proper, or by bit and bit, as it is finished. 23. The back-rolls, on which the warp is rolled. It is to be observed, that there are always as many rolls as colours in the work to be wove. 24. The clamps, which support the rollers. 25. The returning sticks, or, as others call them, the returns, or the tumblers, or pullies, to which the tiers are tied, to clear the course of cords through the high-lisses. 26. The catch-board, for the tumbler. 27. The tire-board. 28. The buttons for the knee-rolls and treddle-board, described in number 20.

Ribbons of all sorts are prohibited to be imported.

RIBBANDS, in ship-building, certain thin narrow planks, which are so made, that they may be easily bent to the timbers. That which is nailed to the stern-post at the height of the rising line, and to the mid-ship-frame at the end of the rising of the floor-timbers, is called the floor-ribbon. That which answers to the wing-transom, and to the height of the lower deck on the midship-frame, is called the breadth ribbon: all the rest between these two are called intermediate ones. These ribbands are nailed to all the frames from the stern-post to the stem, and when they are carried round, so as to make fair curves, the form of all the filling timbers may by them be determined.

RIBS, *Coffe*, in anatomy, long arched bones, serving to sustain the inner sides of the thorax. The ribs are twenty-four in number, viz. twelve on each side of the twelve vertebræ of the back; they are crooked, and resemble the segments of a circle; they grow flat and broad, as they approach to the sternum; but the nearer they are to the vertebræ, they are the rounder and thicker, at which end they have a round head, which, being covered with a cartilage, is received into the sinus in the bodies of the vertebræ; and at the neck of each head, except the two last ribs, there is a small tubercle, which is also received into the sinus of the transverse processes of the same vertebræ. The ribs, thus articulated, make an acute angle with the lower vertebræ. The ribs have each a small canal or sinus, which runs along their under sides, in which lies a nerve, vein, and artery. Their extremities, which are fastened to the sternum, are cartilaginous, and the cartilages make an obtuse angle with the

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bony part of the ribs: this angle respects the head. The cartilages are harder in women than in men; that they may better bear the weight of their breasts. The ribs are of two sorts; the seven upper ones are called *coffe verae*, because their cartilaginous ends are received into the sinus of the sternum; the five lower are called *falsæ*, because they are softer and shorter, of which only the first is joined to the extremity of the sternum, the cartilaginous extremities of the rest being tied to one another, and thereby leaving a greater space for the dilation of the stomach and entrails. The last of these false ribs is shorter than all the rest; it is not tied to them, but sometimes to the musculus obliquus descendens. If the ribs had been articulated with the bodies of the vertebræ at right angles, the cavity of the thorax could never have been enlarged in breathing. If each rib had been a rigid bone articulated to the transverse processes of the vertebræ, the sternum could not have been thrust out to that degree that it is now, or the cavity of the thorax could not have increased so much as is requisite in inspiration; for, when the ribs are pulled up by the intercostal muscle, the angles which the cartilages at the sternum make with the bony part of the rib, must be increased, and consequently its substance, or the distance between the sternum and the transverse processes lengthened. Now, because the rib cannot move beyond the transverse process, upon the account of its articulation with it, therefore the sternum must be either thrust to the other side, because of an equal pressure upon the same account there, and therefore it is thrust outwards; or the distance between the sternum and vertebræ is increased. The last ribs which do not reach the sternum, and consequently produce nothing in this action, are not articulated with the transverse processes.

RIBS of a Ship, a figurative expression implying the timbers.

* **RICHARD I.** king of England, surnamed *Cœur de Lion*, or *Lion-heart*, ed, succeeded his father Henry II. the 6th of July 1189, at which time he was count of Poitou, and duke of Normandy. He commenced his reign by selling the crown-lands, and exacting money on various pretences in order to go to the holy war. He undertook this expedition in 1190, when he embarked with his whole army for France, where he joined the forces of the French king; and they having

having ratified their alliances, marched together with their combined forces, which consisted of an hundred thousand men, as far as Lyons, where they separated, and Richard continuing his march to Marseilles, re embarked there for Sicily, where the two kings spent the winter; and the next spring, continuing their voyage, Richard with his fleet was driven on shore in the island of Cyprus, where Isaac, the king of the island, treating the English with inhumanity, Richard took him and his daughters prisoners, loaded the Cyprian monarch with silver chains, and having thus conquered the isle of Cyprus, exchanged it with Guy Lusignan for the titular kingdom of Jerusalem. Richard afterwards gained a complete victory over Saladin, took the city of Acre, and made himself master of Ascalon, Joppa, and Cesarea; but being deserted by Philip Augustus, king of France, and the dukes of Burgundy and Austria, he could not continue his conquests; and therefore on hearing that his brother John was aspiring to the throne of England, he concluded a truce of three years with Saladin, and embarked in order to return to his dominions; but having the misfortune to be shipwrecked near Aquileia, he resolved to pursue his journey in disguise through Germany; but, after several difficulties, was taken when he was asleep, in a mean lodging near Vicina, by order of Leopold duke of Austria, whom he had disoblged at the siege of Acre; and that duke delivered him up, the following year, to the emperor Henry VI. who, after treating him with great indignities, obliged him to pay 150,000 marks for his ransom, which his loyal subjects cheerfully raised by a voluntary tax. He then returned to England, after an absence of four years, of which he had passed fifteen months in prison. He soon suppressed the party raised by his brother John, confiscated his lands, and then raising a numerous army, invaded France, and afterwards, at the battle of Blois, took all the archives of the kingdom, and continued the war against Philip, with various success, for five years, after which a truce was concluded: but a gentleman of Limosin having discovered a treasure upon his estate, Richard laid claim to it as sovereign of Guienne, and besieging the gentleman in the castle of Chaluz, was wounded by an arrow in the shoulder, of which he died eleven days after, on the 6th of April 1199. Richard had

a tall, graceful, fair, and well-proportioned person. His eyes were blue and sparkling, and his hair of a bright yellow, inclining to red. He had prodigious strength of body, amazing courage and intrepidity, and was an illustrious warrior, but exceedingly ambitious, proud, and avaricious, and his love of glory made him neglect the happiness of his people. The reverend Mr. Granger observes, that the saint-errantry of Richard, who sacrificed all other views for the glory of the crusades, is an instance, among a thousand others, that offensive and enterprizing valour may be a worse quality than cowardice itself; and that he was but eight months in his kingdom during a reign of ten years.

* RICHARD II. king of England, was the son of Edward the Black Prince, and succeeded his grandfather, Edw. III. the 21st of June 1377, at eleven years of age; when the parliament appointed several governors to the king, and ordered that his three uncles, with some of the nobility, should be regents of the kingdom. A truce which had been agreed to with France being now expired, the French sent a fleet to ravage the coasts of England, and the regents ordered out a fleet to oppose them. The king of France also prevailed on Robert II. king of Scotland to invade England; but the French king dying, the military preparations were suspended. In 1380, a poll-tax being raised on all persons above fifteen years of age, for the assistance of Ferdinand king of Portugal, against John king of Castile, it was levied with the greatest rigour and brutality by the collectors, on which a rebellion was raised, and an hundred thousand men appeared in arms, headed by Wat Tyler, a tyler of Deptford, and Jack Straw, who committed innumerable disorders, and entered London without opposition; but William Walworth, the mayor, killing Wat Tyler with a blow of his sword, this great army was easily dispersed. The kingdom soon after becoming greatly exasperated at the fondness shewed by the king for his new favourites, Robert de Vere, earl of Oxford, and Michael de la Poole, a merchant's son, whom he had created earl of Suffolk, the parliament refused to grant the supplies, unless he dismissed them from his service; but though the king said, that "to please the parliament he would not discharge the meanest scullion in his kitchen," and sent his chancellor to order them to grant the de-

fired subsidy, he was obliged to part with his favourites, and to admit of fourteen commissioners to take care of the public affairs jointly with himself. The parliament were, however, no sooner dissolved, than they were recalled, and the king sent orders to the sheriffs to let no representatives be chosen but what were in his list. He also endeavoured to raise an army, to chastise his uncle the duke of Gloucester, and the earls of Arundel, Warwick, Derby, and Nottingham, who were enemies to his favourites, and were considered as the protectors of the people: but these lords speedily levying forces, defeated the earl of Oxford, who had been made duke of Ireland; when the king took refuge in the tower, where, the next year, he answered the complaints of the lords with a shower of tears, consented to the banishment of his favourites, who were accordingly sent into exile, and repeated his coronation oath. In 1392, the Londoners refusing to lend the king a sum of money, he took away their charter, and removed the courts of justice to York. Anne of Luxemburgh, the emperor's daughter, and the king's first wife, dying in 1394, he, in 1396, married Isabella, the daughter of Charles VI. king of France, who was only seven years of age, when a truce was concluded for twenty-eight years. Richard, however, extorted money from his subjects, and, for inconsiderable sums, yielded Cherburg to the king of Navarre, and Brest to the duke of Brittany: he ordered the duke of Gloucester to be seized and conveyed to Calais, where he was privately strangled, and some of the nobility were beheaded, and others banished. The Scots ravaged the borders of England, the Irish revolted, and the merchant ships were plundered with impunity by the corsairs of Holland. Seventeen counties were condemned as guilty of treason, and the estates of all the inhabitants adjudged to the king, for granting assistance to the duke of Gloucester; but the king landing in Ireland, in 1399, with a powerful army, in order to chastise the rebels, a rebellion was raised in his absence; when the king, at his return, finding that the revolt was general, shut himself up in Conway castle, and soon after submitted to Henry duke of Lancaster, and was sent to the Tower; when a parliament being called, he was solemnly deposed, and Henry proclaimed king on the 30th of September 1399; after which he was removed

to Pontefract castle in Yorkshire; but on the 14th of February 1400, Sir Pierce Exton, with eight ruffians, undertook to murder him, hoping thereby to please king Henry IV. and rushed into the room where he was, when Richard bravely wrested a pole-ax from one of the assassins, with which he slew four of them; but Exton mounting on a chair behind him, struck him on the head with such violence, that Richard dropped down dead, in the thirty-third year of his age, after a reign of twenty-two years, and was interred at King's Langley in Hertfordshire; but his body was afterwards removed to Westminster-abbey; by order of king Henry V. King Richard II. had a very graceful person, and was of a sprightly disposition. He was particularly remarkable for his tyranny, and the numerous breaches of his oaths, and most solemn engagements.

* RICHARD III. king of England, surnamed Crook-backed Richard, was the brother of Edward IV. and raised himself to the throne by a series of inhuman murders. Henry VI. and the young prince his son, with several noblemen of the first rank, died while he was duke of Gloucester, to prepare the way for his usurping the throne from Edward IV. He was proclaimed king the 20th of June 1483, in the thirty-second year of his age, but delayed the ceremony of his coronation till the 6th of July; and soon after caused Edward V. and his brother, whom he had before declared to be bastards, to be smothered in the Tower. The same year, having broke his promise to the duke of Buckingham, who had been greatly instrumental in raising him to the throne, that nobleman took up arms against him, in order to assist Henry earl of Richmond, the last branch of the house of Lancaster, to obtain the crown; but Buckingham being betrayed by a fellow who had been his servant, for the sake of a reward of a thousand pounds offered for taking him, he was beheaded at Salisbury, without any legal process. However, the earl of Richmond obtaining assistance from the duke of Brittany, sailed from St. Maloes, on the 12th of October, with five thousand men, and forty ships; but his fleet being dispersed, he returned to Brittany, and afterwards to France. Richard, in the mean time, sacrificed many persons to his revenge, and sent Sir Ralph Ashton into the western counties, with power to execute upon the spot all such

persons whom he even suspected to be guilty of high treason; and finding that the earl of Richmond founded his projects on the hopes of marrying Elizabeth the daughter of Edward IV. he resolved to marry that princess himself, though he was already married to the widow of the prince of Wales, the son of Henry VI. whom he had himself murdered: and therefore now, in order to obtain Elizabeth, he is said to have poisoned his queen. The earl of Richmond, however, landed in Wales, with two thousand men, which increased to five thousand, and with this small army engaged the king's forces, which consisted of thirteen thousand men, at Bosworth: but the earl being joined by the lord Stanley and his brother with fresh troops, he gained a complete victory, when Richard, finding that the day was lost, rushed into the midst of his enemies, and died with his sword in his hand. The crown being found after the battle, was placed on the head of Henry earl of Richmond; and Richard's body was taken up entirely naked, and covered with blood and dirt, in which condition it was thrown across a horse, carried to Leicester, and interred without the least ceremony. Thus perished Richard on the 22d of August 1485, in the thirty-fourth year of his age, after an infamous reign of two years. Thus Richard III. if any regard is to be paid to the generality of our historians, was, through the whole course of his life, restrained by no principle of justice or humanity: and it appears that he endeavoured to maintain the crown by the same fraud and violence by which he obtained it. Though Mr. Walpole has struck new light into the darkest passages of English history, and has brought many presumptive proofs, that Richard was neither that deformed person, nor that monster of cruelty and impiety which he was represented by historians. And though Mr. Walpole has done much towards clearing up the character of Richard, he has left the matter still problematical.

• RICHARDSON, SAMUEL, an ingenious English writer, was born in 1688, and bred to the business of a printer, which he exercised with distinguished eminence. Though he understood no language but the English, he obtained a considerable degree of merit and of fame by his writings of the novel kind, in which he had a manner peculiar to himself. His *Pamela*, *Clarissa*, and *Sir Charles Grandison* have been universally

read, and translated both into French and Dutch. He is said to have delighted in letter-writing from his childhood, and therefore was the more easily induced to throw the above works into that form. He there shews an admirable knowledge of the human heart, and an amazing skill in moving the passions. His purpose was to promote virtue and moral rectitude, and hence his works abound with religious and moral sentiments. He was a man of virtue and humanity, which he shewed in his life as well as in his writings. A stroke of the palsy carried him off, after a few days illness, on the 4th of July 1761, aged 73 years.

RICKETS, *Rhachitis*, in medicine, a disorder incident to children, proceeding from an unequal nutrition. Children are seldom attacked with rickets before they are nine months old, and after they are two years old. It may originally proceed from the disorders of the parents, and may be increased by those of the nurse. It is also promoted by feeding the child with aqueous and mucous substances, crude summer fruits, fish, and too great a quantity of sweet things; by sitting too much, especially in a perforated chair, with its coats up; by a striking in of the itch, &c. This disorder is known from a flaccid tumour of the head and face, a flabby loose skin, a swelling of the belly, and a falling away of the rest of the other parts, especially of the muscles; from protuberances of the apophyses of the joints, such as the wrists, ancles, and knees; from the largeness of the jugular veins and arteries, while the rest decrease; from knotty ribs, a narrow breast, and carious teeth, &c. The cure, according to Boerhaave, is to be attempted with light, nourishing, dry aliment; not fat, but seasoned, and taken often; with a little sound drink, such as mild beer, or ale; with a dry warm air, and warm woollen cloathing; with being carried about in the arms, or drawn in a vehicle over the stones, and often shook, swung, and put in motion; with repeated frictions, especially of the belly and spine of the back with warm dry flannel, sprinkled with aromatics; with gentle emetics frequently though prudently repeated; with strengthening purges for several days successively; and with cold bathing, the child being put to sweat between blankets every day, as soon as he comes out of the water. Particularly for food, the bread should be biscuit, with a little saffron and spices; the flesh should be pigeons, pullers, veal, rabbits,

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rabbits, mutton gently roasted, minced and mixed with biscuit, salt, a little parsley, thyme, nutmeg, or the like. He may also eat rice, millet, or pearl-barley, boiled with raisins, to which add a little wine, of which an ounce may be given three or four times a-day; as also Brunswick mun and English beer, which in the summer may be mixed with spaw-water. Let the pillow and bed be filled with the following leaves dried in the shade, viz. of mallow, three pounds, of marjoram, baum, and mint, each two handfuls; and of the flowers of melilot, sweet trefoil, elder, and roses, dried in the shade, of each two ounces: reduce them all to powder, and mix them with double the quantity of barley-chaff.

RIDEAU, in fortification, a small elevation of earth, extending itself lengthwise on a plain, serving to cover a camp, or give an advantage to a post.

RIDERS, in ship-building, strong timbers fayed on the inside of the ship, and reaching from the keel upwards to the beams of the orlop, or lower deck, and sometimes higher. They are usually fixed in the middle of the ship when she is considerably weakened by age, or lying often on the ground.

RIDGE, in building, the highest part of the roof, or covering of a house, &c.

RIDGE, in agriculture, a long piece of rising land, between two furrows.

RIDGES of a Horse's Mouth, wrinkles or risings of the flesh in the roof of the mouth, running across from one side of the jaw to the other, with interjacent furrows.

RIDING, in the sea language, the situation of a ship which lies at anchor in a road, bay, or haven. There are various positions of riding, according to the circumstances of the tide, wind, or current; as riding athwart, riding between wind and tide, &c. Riding athwart, is when the ship lies nearly at right angles with the current. This is occasioned by the great force of the wind, which acts in opposition to the tide, and overbalances it by as much as the ship is moved across its stream. Riding between wind and tide, is the situation in which a ship lies, when the one counter-acts the other, so as to diminish its effort considerably, and occasion the ship to lie as it were balanced between them. Riding easy, is the state of a ship which does not strain hard upon her cables, by pitching deep into the water, and rising with a sudden jerk, so as to dislodge the anchor, or break the cable. Riding hard, the state of labouring vio-

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lently at anchor in a road which is exposed to the force of the wind and the swell of the sea, so as to endanger the cables and anchors, besides straining the hull to a great degree. A ship which rolls at her anchors, always rides easy; whereas one that pitches usually rides very hard.

* **RIDLEY**, **NICHOLAS**, bishop of London, was an eminent English bishop and reformer. He was under the reign of Edward VI. raised to the bishoprick of Rochester, and afterwards to that of London: but in the reign of queen Mary was deprived of his bishoprick, condemned, and inhumanly burnt at the stake at Oxord, on the 16th of October 1555. He was one of the most eminent of the Protestant divines, and promoted the reformation by his sermons and his writings.

RIGADOON, a gay and sprightly dance, borrowed originally from Provence in France, and performed in figure, by a man and a woman.

RIGGING, amongst seamen, a term comprehending all the ropes, either to secure the masts, or manage the sails and yards.

Rigging is usually divided into two parts, viz. the standing, and the running. The standing rigging denotes, in general, all that which is employed to fasten and sustain the several masts of a ship. Such are the shrouds, stays, and back-stays. The shrouds sustain the masts on each side, the stays support them from before, and the back-stays from behind. Back-stays, however, are only used to the top-masts; their intent being answered on the lower masts by the utmost shrouds. The running rigging implies all the ropes which are employed to dilate, contract, or change the disposition of the sails. They are called running because they move through a number of blocks and pulleys, artfully disposed amongst the yards and masts. The other rigging is termed standing, because it is always drawn tight, and is never removed but when the ship is either partially or wholly unrigged. The principal articles of the running rigging are, the haliards, to hoist up the sails; the sheets, to extend their lower corners; the braces, to wheel them about on the masts; and the brails, to draw them up together when they are to be reduced or furled.

A mast is rigged thus: first a collar, or ring of rope, is put over it, to prevent the rigging from being cut or chafed; then the runner pendants; a pair of shrouds on the starboard-side; a pair on the larboard; and so on alternately till the

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the shrouds are fixed; after which the stays are placed over all. The shrouds first placed on the mast-head are the farthest forward, and the last farthest aft *See Pendant*.

The rigging of a yard is also begun by a sort of collar; next the hories; the braces; and lastly the lifts.

RIGGING-OUT, thrusting out any boom to extend the foot of a sail, as the jib-boom, which is run out from the bowsprit; the driver-boom, which projects over the ship's side; and the studding-sail booms, which are thrust out from the several yard-arms.

RIGHT, in geometry, signifies the same with straight: thus, a straight line is called a right one. As for right angle, right ascension, right cone, right descension, right sine, right sphere, &c. they are explained under the articles *Angle*, *Ascension*, &c.

RIGHTING of a Ship, amongst seamen, the act of raising or erecting her after she had inclined to one side, on a career or otherwise.

RIGHTING the Helm, placing it amidst-ships, so as to make the ship continue in the course to which her stem is directed by the former impulse of the helm.

RIGIDITY, in philosophy, a brittle hardness; or that species of hardness supposed to arise from the mutual indensation of the component particles within one another.

RIGOR, in medicine, a convulsive shuddering, from severe cold, an ague fit, or other disorder.

RIM of the Top, in the sea-language, the outer-edge of it, through which the plates of the top-mast shrouds pass.

RIME, or **RHYME**. *See Rhyme*.

RIND, the coat or skin of any fruit, &c. It is also used for the inner bark of trees, or that soft, whitish, juicy substance adhering immediately to the wood.

RING, an ornament of gold, silver, &c. of a circular form, generally worn on the finger.

RING-BORE, in farriery, a hard callous substance, growing in the pattern of a horse, above the coronet: it is thus called from its growing quite round like a ring.

RING-BOLT, in ship-building, a strong ring of iron with a bolt in it, which is driven into the sides or decks of a ship, to which the ring is firmly confined. These are principally employed to fasten or secure the moveables on the deck at sea, particularly the cannon, and boats.

RING-ROPE, a short rope, occasion-

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ally fastened to the ring-bolts, to secure the cable, when it is to be gradually slackened or veered out in tempestuous weather.

RING-TAIL, a small flying sail, extended occasionally in the after-part of some small ships.

RIOT, in law, the forcibly doing of an unlawful thing, of a private nature, by three or more persons assembled together for that purpose. By a late act of parliament, a riot was made felony, if the rioters did not disperse after reading the proclamation for that purpose.

RIPENERS, in medicine, a kind of topical medicines, which promote suppuration.

RIPPLING, amongst sailors, a short broken interrupted current, which produces a murmuring noise to a considerable distance.

RITE, among divines, the particular manner of celebrating divine service, in this or that country. *See Ritual*.

RITORNELLO, or **REPEAT**, in music, the burden of a song, or the repetition of the first or other verses of a song at the end of each stanza or couplet. Custom has extended the use of the word to all symphonies played before the voices begin; and which serve by way of prelude to what follows. In the partitions of the score of the Italian music, we frequently find the ritornellos signified by the words *si suona*, to shew that the organ, spinnet, harpsichord, or the like, are to repeat some bars of what the voice has been singing.

RITUAL, a book directing the order and manner to be observed in celebrating religious ceremonies, and performing divine service in a particular church, diocese, order, or the like.

RIVER, *Fluvius*, or *Flumen*, a current or stream of fresh water flowing in a bed or channel, from its source into the sea. The great, as well as the middle-sized rivers, proceed either from a confluence of brooks and rivulets, or from lakes; but no river of considerable magnitude flows from one spring, or one lake, but is augmented by the accession of others. Thus the Wolga receives above two hundred rivers and brooks before it discharges itself into the Caspian Sea; and the Danube receives no less, before it enters the Euxine Sea. Some rivers are much augmented by frequent rains, or melted snow. In the country of Peru and Chili, there are small rivers, that only flow in the day; because they are only fed by the snow upon the mountains of the Andes,

des, which is then melted by the heat of the sun. There are also several rivers upon both sides the extreme parts of Africa, and in India, which for the same reason are greater by day than by night. The rivers also in these places are almost dried up in summer, but swell and overflow their banks in winter, or in the wet season. Thus the Wolga in May and June is filled with water, and overflows its shelves and islands, though at other times of the year it is so shallow, as scarcely to afford a passage for loaded ships. The Nile, the Ganges, the Indus, &c. are so much swelled with rain or melted snow, that they overflow their banks; and these deluges happen at different times of the year, because they proceed from various causes. Those that are swelled with rain, are generally highest in winter, because it is usually then more frequent than at other times of the year; but if they proceed from snow, which in some places is melted in the spring, in others, in summer, or between both, the deluges of the rivers happen accordingly. Again, some rivers hide themselves under-ground, and rise up in other places, as if they were new rivers. Thus the Tigris meeting with mount Taurus, runs under it, and flows out at the other side of the mountain: also, after it has run through the lake Tospia, it again emerges, and being carried about eighteen miles under ground, breaks out again, &c. The channels of rivers, except such as were formed at the creation, Varenus thinks, are artificial. His reasons are, that, when a new spring breaks out, the water does not make itself a channel, but spreads over the adjacent land; so that men were necessitated to cut a channel for it, to secure their grounds. He adds, that a great number of channels of rivers are certainly known from history to have been dug by men. The water of most rivers flow impregnated with particles of metals, minerals, &c. Thus some rivers bring sands intermixed with grains of gold; as in Japan, Peru, and Mexico, Africa, Cuba, &c. particularly in Guinea is a river, where the negroes separate the gold dust from the sand, and sell it to the Europeans who traffic thither for that very purpose. The Rhine in many places is said to bring a gold mud. As to rivers that bring grains of silver, iron, copper, lead, &c. we find no mention of them in authors; though, doubtless, there are many, and it may be to them that mineral waters owe many of their medicinal virtues.

Theory of the Motion of RIVERS. The running of rivers is upon the same principle as the descent of bodies on inclined planes; for water no more than a solid can move on an horizontal plane, the reaction of such a plane being equal and contrary to gravity, entirely destroys it, and leaves the body at rest: here we speak of a plane of small extent, and such as coincides with the curved surface of the earth. But if we consider a large extent or long course of water, then we shall find that such water can never be at rest, but when the bottom of a channel coincides every where with the curved surface of the earth.

The difference of the descending velocities being greatest near the head of the stream, the waters will there fall or descend with the greatest impetuosity, or cause the loudest noise. But in the course of rivers, the accelerated velocity is quickly reduced to an equable or uniform velocity, by the resistance it meets with from the bottom and sides of the channel, which resistance will be as the squares of the velocities, and therefore soon become so great as to equal the accelerating force, and be communicated to the middle part of the stream, causing the whole to move uniformly. Hence, in rivers, the motion of the water is slowest at the sides and bottom of the channel, because there the resistance begins, which is afterwards communicated to all the other parts; and in different parts of the same river, the uniform velocity is greatest, where the bottom of the channel has the greatest inclination or declivity, because the relative gravity of the moving particles is here greatest. Again, in those parts of the river where the velocity of the stream is least, the depth of the water is greatest, and *vice versa*, because equal quantities pass through unequal sections of the river in the same time. Hence also it follows, that the momentum of running water must be every where the same, or a given quantity. The New River was brought to London in the year 1614.

RIVULET, a diminutive of river. See *River*.

* *RIZIO*, (DAVID) an Italian, was the son of a musician in Turin; and having accompanied the Piedmontese ambassador into Scotland, gained admission into the queen's family by his skill in music. His servile condition had taught him suppleness of spirit, and insinuating manners. He quickly obtained the queen's favour, and, her French secretary happen-

ing to return into his own country, he was preferred by her to that office. He now began to make a figure at court, and to appear as a man of weight and importance: the whole train of suitors and expectants applied to him as the channel to success. His recommendations were observed to have great influence over the queen, and he was considered not only as a favourite, but as a minister. Rizio, far from being careful to abate that envy, which always attends such a rapid change of fortune, studied to display the whole extent of his favour. He affected to talk often and familiarly with the queen in public. He equalled the greatest and most opulent subjects in richness of dress, and in the number of his attendants. He discovered in all his behaviour that assuming insolence with which unmerited prosperity inspires an ignoble mind. It was with the utmost indignation that the nobility beheld the power, and with the utmost difficulty that they tolerated the arrogance of this unworthy minion! Even in the queen's presence they could not forbear treating him with marks of contempt. Nor was it his exorbitant power alone which exasperated the Scots. They considered him as a dangerous enemy to the protestant religion, and suspected that he held a correspondence with the court of Rome. It was lord Darnly's misfortune to fall under the management of this man; who, by flattery and assiduity, easily gained on his vanity and inexperience. Rizio's whole influence on the queen was employed in his behalf, and, doubtless, contributed towards establishing him more firmly in her affection. After Darnly's marriage with the queen, his pride and insolence to her majesty, cooled her affection, and Rizio refusing to humour him in his follies, he imputed the queen's coldness, not to his own behaviour, but to the insinuations of Rizio. Mary's conduct strengthened these suspicions. She treated this stranger with the utmost familiarity, and admitted him to a share in her confidence. He was perpetually in her presence, intermeddled in every business, and, together with a few favourites, was the companion of her private amusements. Darnly's haughty spirit could not bear the interference of such an upstart, and unrestrained by any scruple, he instantly resolved to get rid of him by violence. A plan was laid for Rizio's destruction, in which were engaged the earl of Morton, the lord high chancellor

of the kingdom, and the lords Ruthven, Lindsay, and Maitland. The lord Ruthven, who had been confined to his bed by illness, for three months, and who was still so feeble that he could scarce walk, or bear the weight of his own armour, was entrusted with the executive part, and while he himself stood in need of being supported by two men, he came abroad to commit a murder in the presence of his sovereign. On the 9th of March, 1566, Morton entered the court of the palace with 160 men, and without noise or meeting with any resistance, seized all the gates. While the queen was at supper in her bed-chamber, with the countess of Argyle, Rizio, and a few domestics, the king suddenly entered the apartment by a private passage. At his back was lord Ruthven, in complete armour, with that ghastly and horrid look which long sickness had given him. Three or four of his trusty accomplices followed him. Such an unusual appearance alarmed those who were present: Rizio instantly apprehended that he was the victim they intended to sacrifice, and in the utmost consternation retired behind the queen, of whom he laid hold, hoping that the reverence due to her person might prove some protection to him: but the conspirators had proceeded too far to be restrained by any consideration of that kind. Numbers of armed men rushed into the chamber. Ruthven drew his dagger, and with a furious mein and voice commanded Rizio to leave a place of which he was unworthy, and which he had occupied but too long. Mary employed tears and entreaties, and threatenings, to save her favourite; but notwithstanding all these, he was torn from her by violence, and before he could be dragged through the next apartment, the rage of his enemies put an end to his life, by piercing his body with no less than fifty-six wounds.

ROACH, in ichthyology, a species of cyprinus, with the iris and belly-fins usually red; it is generally, when full grown, nine inches long, but it sometimes grows considerably larger.

ROACHING of Alum, the last process in making alum, which being sufficiently washed in a cistern of strong alum-water, is put into large pans, and a quantity of water added to it; and then being set over the fire to melt, and boil a little, it is scooped into a great cask, where it is suffered to stand and

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chrySTALLIZE, and is what they call roach, roached, or rock alum. See *Alum*.

ROAD, an open way, or public passage, forming a communication between one place and another.

ROASTING, in metallurgy, the separation of volatile bodies from those which are more fixed; by the combined action of air and fire; and is generally the first process in the separation of metals from their ores: it differs from sublimation only in this, that in this operation the volatile parts are dissipated, when resolved into vapours; whereas in that, they are preserved. See *Sublimation*.

ROB, in pharmacy, the juices of fruits purified and inspissated till it is of the consistence of honey.

ROBBERY, in law, a felonious taking away another man's goods from his person, presence, or estate, by putting him in fear.

ROBERVALLIAN LINES, certain lines used for the transmutation of figures, and so called from their inventor M. de Roberval.

ROBORANTS, in pharmacy, medicines which strengthen the parts, and give new vigour to the constitution. See *Strengtheners*.

* **ROCHESTER**, a city of the county of Kent, with two markets, on Wednesdays and Fridays, and two fairs, on May 30, and December 11, for horses, bullocks, &c. It is seated on the river Medway, over which there is a handsome stone bridge, with strong iron work on the copings. It is governed by a mayor, twelve aldermen, and twelve common-council-men, and sends two members to parliament. It is an ancient place, and was formerly much larger than at present. Its castle (which is now in ruins) rendered it of great importance; and there are here also some remains of a priory. It is a bishop's see, and has an handsome cathedral, with three parish-churches, built with stone and flints. It contains about 700 houses, and about 2000 inhabitants. It consists of only one principal street, which is wide, and paved. The houses are generally well-built with brick, and inhabited chiefly by tradesmen and innkeepers: it has also four narrow streets, but no sort of manufactory is carried on here. It has two free-schools, one called the King's, and the other the City school. There is here also an almshouse for six poor travellers, who are sup-

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plied with a supper, a bed, and breakfast, with fourpence to carry them forward on their journey; but they are to stay no longer than one night. Stroud is at the west end of this place, and Chatham at the east. It is twenty-seven miles north-west-by-west of Canterbury, and thirty south-east-by-east of London. Long. 9. 34. E. Lat. 51. 22. N.

ROCKET, in pyrotechny, an artificial fire-work, consisting of a cylindrical case of paper, filled with a composition of certain combustible ingredients; which, being tied to a stick, mounts into the air, to a considerable height, and there bursts.

To make Stars for ROCKETS. Mix three pounds of salt-petre with eleven ounces of sulphur, three ounces of beaten gunpowder, and ten of antimony. Moisten the mass with gum-water, and form them into little balls of the size of filberds; drying them well, either in the sun or an oven. When dry, inclose a number of them in the conical cap of the rocket.

ROD a wand, or long slender staff.

ROB, a land measure of sixteen feet and a half: the same with perch and pole.

RO, in gauging. See *Gauging*.

Black-ROD, a staff carried by the king's gentleman usher, as a badge of his office; this rod or staff is black, and has a lion in gold on its top.

ROE, the spawn or seed of fish. That of the male-fishes is usually distinguished by the name of soft roe, or milt, and that of the female, by hard roe, or spawn.

ROGATION, in the Roman jurisprudence, a demand made by the consuls or tribunes of the Roman people, when a law was proposed to be passed. Rogatio is also used for the decree itself made in consequence of the people's giving their assent to this demand, to distinguish it from a *senatus consultum*, or decree of the senate.

ROGATION-WEEK, the week immediately preceding Whit Sunday, so called from the three fasts therein on Monday, Tuesday, and Wednesday, which are also called rogations, or rogation-days, from the extraordinary prayers and supplications at this time offered to God by devout Christians, to appease his anger, and deprecate his judgments.

ROGUE, in law, an idle sturdy beggar; who by ancient statutes is for the first offence called a rogue of the first degree,

gree, and punished by whipping, and going through the gristle of the right ear with a hot iron; and for the second offence, is termed a rogue of the second degree, and if above eighteen years of age ordered to be executed as a felon.

ROGUES-YARN, in sea-affairs, a yarn or thread in all cordage made for the king's service, by which such cordage may be easily distinguished from any other, as the rogues-yarn is twisted contrary to all the other. The use of this precaution is to prevent or discover embezzlement of the cables, hawsers, &c. by the boatswain, who is charged with them.

ROLL, in manufactories, something wound and folded up in a cylindrical form.

ROLL, in law, a schedule or parchment which may be rolled up by the hand into the form of a pipe.

Mustel-ROLL, that in which are entered the soldiers of every troop, company, regiment, &c.

Rider-ROLL, a schedule of parchment frequently sewed or added to some part of a roll or record.

ROLLS of Parliament, the manuscript registers, or rolls of the proceedings of our ancient parliaments, which before the invention of printing were all engrossed on parchment, and proclaimed openly in every county.

ROLL, or ROLLER, also a piece of wood, iron, brass, &c. of a cylindrical form, used in the construction of several machines, and in several works and manufactures.

ROLLER, in surgery, a long and broad bandage, usually of linen cloth, rolled round any part of the body, to keep it in, or dispose it to a state of health.

ROLLING - PRESS *Printing*. See *Printing*.

ROLLING, in naval affairs, the motion of a ship rocking from one side to the other, as produced by the agitation of the waves. When a ship rolls heavily at sea, it exposes the mast continually to the danger of being carried away. It is generally occasioned by the ship having too great a quantity of heavy ballast near the keel, which makes the vessel very stiff. The rolling motion of a ship appears to begin from a center at the keel, where the larboard strake or plank is let in; if so, there is a motion below it to the depth of the keel, as well as the motion aloft; though the keel has but

little motion comparatively with the motion above: and the greater will that motion be in proportion to its distance, even to the spindle at the top-mast-head, which makes the radius, and consequently the circle greater. The keel being in-tire, as the body of the vessel moves one way, the lower part of the keel moves contrariwise; and the deeper it is, the larger is the body or circle of water moved thereby. Is it not therefore demonstrable, that the greater the body of water is, which opposes the motion of the keel, the greater is the opposition? For if the keel had no motion from the center before-mentioned, or from the step of the main-mast, which perhaps is more properly the center of motion, there would be no motion above it.

ROLLING-TACKLE, a tackle hooked to the weather-yard-arm, to confine the yard to leeward, and prevent it from rubbing the mast, and galling it by the agitation of the ship.

ROMAN, in general, something belonging to the city of Rome.

King of the ROMANS, in modern history, a prince elected to be successor to the reigning emperor of Germany.

ROMAN Order, in architecture, the same with the Composite order. See *Order and Composite*.

ROMANCE, in matters of literature, a fabulous relation of certain adventures, designed for the entertainment and instruction of the readers.

*** ROME**, the capital city of the pope's territories, and of all Italy, was founded 750 years before the birth of Christ, and was formerly much larger than it is at present; though it continues to be one of the greatest and finest cities of Europe. It has twenty gates, three hundred towers, as many churches, six bridges over the Tiber, and about one hundred and fifty thousand inhabitants, besides strangers, of whom there is generally a great number. It has strait and spacious streets, and has two thousand two hundred palaces, ninety-two parishes, forty-one national churches, sixty-four religious houses of men, forty of women, and thirty hospitals. However, there are seven, that, by way of eminence, are called the seven churches, being esteemed comparatively more sacred than the rest: St. John de Lateran, St. Peter in the Vatican, St. Paul, St. Mary the Greater, St. Lawrence without the walls, and the Holy Cross of Jerusalem. St. Peter's church is seated on the side of the Tiber, and is

esteemed the most majestic structure of the kind in the universe. The church of St. John Lateran, is the cathedral of Rome, where the emperors were formerly crowned, and where the popes now take possession of their dignity, and confer ecclesiastical orders. The body of the church is long and large, and is supported by two rows of pillars on each side; the roof is gilt, and the pavement curiously inlaid with the finest marble. The church of St. Mary Maggiore, is esteemed one of the most beautiful in Rome. The body of it is supported by fine marble pillars of the Ionic order; the roof is gilt, and the walls are adorned with mosaic work. The church of St. Paul is a mile out of Rome, and is said to be first built by Constantine the Great, but it has since been enlarged and beautified by several popes. It is in the form of a cross, and is seven hundred and eighty feet in length, by two hundred and sixty in breadth, supported by one hundred marble pillars, in four rows. The high altar is supported by pillars of jasper, and the roof is embellished with mosaic work. The church of St. Lawrence without the walls is supported by 32 marble pillars, and the pavement is embellished with mosaic work. There are a great many lamps continually burning before the high altar, which is adorned with pillars of jasper, and near it is a little chapel, which contains very fine paintings. The church of St. Sebastian without the walls, is placed on the Via-Appia, where it is said there are a great many saints bodies, and other reliques. The church of St. Croce, or the Holy Cross of Jerusalem, is the last of the seven churches, and contains a high altar, which is extremely beautiful, and the pavement is entirely of mosaic work. The rotunda is very remarkable for having no pillar, and was a temple of the ancient Romans, called the Pantheon. It is now dedicated to the Virgin Mary, and All Saints; but some years ago the roof unhappily fell in, to the great damage of that ancient structure. The library of the Vatican is the largest and most complete in the world. There is a vast number of manuscripts in all languages, besides excellent pictures by the best masters. Rome is divided into fourteen wards, called Rione; and defended by the castle of St. Angelo, which is built near the river Tiber, flanked with five bastions, and defended by a great number of cannon. In the middle is a large tower, called the

Mausoleum of Adrian, erected by him for a sepulchre. Here they keep the archives and treasure of the church; and there is a subterranean passage to it from the Vatican. There are a great number of magnificent palaces, the most remarkable of which are those of Farnese and Borghese. But what is as remarkable as any thing at Rome, are the hospitals where they take care of the poor, the sick, and the unfortunate; here are not only hospitals for each particular nation, but there are houses of charity for widows, old maids, women that have had husbands, and repenting prostitutes. Rome is said to take up as much ground as Paris within the walls; but then it is not all inhabited, for there are many gardens and vineyards. The inhabitants are said to be very polite, and very far from bigotry, though the contrary might be expected. Rome is very well supplied with water, by its magnificent aqueducts and fountains; and there is plenty of all sorts of provisions, with a great variety of wines. Rome has been several times taken, pillaged, and burnt, by the Goths, Vandals, and other nations, and last of all, by the emperor Charles V. which is the reason it has lost so much of its ancient splendor. It is 670 miles south-east of Paris, 450 south-west of Vienna, and 900 S. by E. of London.

ROMPEE, or ROMPU, in heraldry, is applied to ordinaries that are represented as broken, and to chevrons, bends, or the like, whose upper points are cut off.

ROOD, a quantity of land equal to forty square perches, or the fourth part of an acre.

ROOF, in architecture, the uppermost part of a building. The roof contains the timber-work; and its covering of slate, tile, lead, &c. though carpenters usually restrain the word to the timber-work only. The form of roofs is various; sometimes it is pointed, in which case the most beautiful proportion is to have its profile an equilateral triangle: sometimes it is square, that is, the pitch or angle of the ridge is a right angle, which therefore is a mean proportion between the pointed and flat roof, which last is in the same proportion as a triangular pediment: this is chiefly used in Italy, and the hot countries, where there is but little snow. Sometimes roofs are made in the pinnace form: sometimes they have a double ridge; and sometimes they are mutilated, that is, consist

consist of a true and false roof, which is laid over the former: sometimes again they are in the form of a platform, as most of the eastern buildings are; and sometimes they are truncated, that is, instead of terminating in a ridge, the roof is cut square off at a certain height, covered with a terrass, and encompassed with a ballustrade; and sometimes, again, a roof is made in the manner of a dome. When the walls have been raised to their designed height, the vaults made, the joists laid, the stairs, &c. brought up, then the roof is to be raised, which embracing every part of the building, and with its weight equally pressing upon the walls, is a band to all the work; and besides, defends the inhabitants from rain or snow, the burning heat of the sun, and the moisture of the night, and is of no small advantage to the building, in casting off the rain water from the walls.

ROOK. in ornithology, a species of the wholly black corvus.

ROOKE. Sir George, knight, vice-admiral and lieutenant of the admiralty of England, was the son of Sir William Rooke, knight, and was born in 1650. His father gave him the education of a gentleman, and was very much averse to his going to sea, but at last gave way to his inclinations. His first station in the navy was that of a reformade, in which he distinguished himself by his undaunted courage and indefatigable application, which soon raised him to the post of lieutenant, from whence he rose to that of captain before he was thirty. These preferments he enjoyed under the reign of Charles II. and in that of his successor king James, was raised to the command of the *Deptford*, a fourth rate man of war. In 1689 admiral Herbert sent him as commodore with a squadron to the coast of Ireland, where he heartily concurred with major-general Kirke, in the relief of Londonderry, and assisted in taking the island in the lake, which opened a passage for the relief of the town. Soon after he was employed in convoying the duke of Scomberg's army, which he landed near Carrickfergus, facilitated the siege of that place, and after it was taken sailed with his squadron to Corke, and, notwithstanding all the fire from the batteries, entered the port, and took possession of the great island; but his ships being very foul, he was obliged to return to England. In the beginning of 1690, he was appointed rear-admiral

of the red, and in that station served in the fight off Beachy-Head, which happened the 30th of June following; and notwithstanding the misfortune of our arms, which was indisputably the greatest we ever met with at sea, Mr. Rooke was allowed to have done his duty with much resolution, and therefore was immediately after appointed to command the squadron that convoyed king William to Holland, as he also did in the spring of the succeeding year, and was soon after, promoted to the rank of vice admiral of the blue, in which station he served in the famous battle of La Hogue, the 22d of May, 1692, when it was owing to his vigorous behaviour, that the last stroke was given on that important day, which threw the French entirely into confusion, but the next day he obtained still more glory, for he had orders to go into La Hogue, and burn the enemy's ships as they lay. There were thirteen large men of war, which had crowded as far up as possible, and the transports, tenders, and ammunition-ships were disposed in such a manner, that it was thought impossible to burn them. Besides, the French camp was in sight, with all the French and Irish troops that were to have been employed in the invasion of England, and several batteries were raised on the coast, well provided with heavy artillery. The vice-admiral made the necessary preparations for obeying his orders, but found it impossible to carry in the ships of his squadron; he therefore ordered his light frigates to ply in close to the shore, and having manned out all his boats, went himself to give directions for the attack, burnt that very night six three-deck ships, and the next day six more, from seventy-six to sixty guns, and overset and destroyed the thirteenth, which was a ship of fifty-six guns, together with most of the transports and ammunition vessels, yet this bold action cost the lives of no more than ten men. The vice-admiral's behaviour on this occasion appeared so great to king William, that having no opportunity at that time of promoting him, he settled a pension of 1000*l.* per annum on him for life; and afterwards going to Portsmouth to view the fleet, went on board Mr. Rooke's ship, dined with him, and then conferred on him the honour of knighthood, he having a little before made him vice-admiral of the red. The command of the fleet being now put in commission, Sir George Rooke was entrusted with the great squadron

dron that was to escort the Smyrna fleet, and the joint admirals received orders to accompany him as far to sea as should be thought proper. Upon this occasion, Sir George shewed great reluctance to part with the grand fleet, imagining that as the French squadron was not at Brest, it must be gone to Toulon, and the event proved as he expected. The French waited for him with all their force, which he no sooner found, than he sent orders to the merchant ships to get along shore in the night, and save themselves in the Spanish ports. His whole squadron consisted only of twenty-three ships of war; of these thirteen only were English, eight were Dutch, and two Hamburgers. The fleet of merchant-men under his convoy were composed of four hundred sail. The fleet under Tourville, the French admiral, consisted of one hundred and twenty sail, of which sixty-four were of the line, and eighteen three-deck ships, yet Sir George saved all the men of war, and brought back with him sixty merchant-men, besides those which escaped into the Spanish ports. On his return home, he received the thanks of the merchants; the king made him one of the lords commissioners of the admiralty, and before the close of the year 1694, admiral of the blue. The next year he was admiral of the white, and was also appointed admiral and commander in chief in the Mediterranean. In the spring of 1697, Sir George Rooke was appointed admiral and commander in chief of the fleet, which put to sea in a very indifferent condition, it being but half manned, and half victualled, when cruising off the French coast, he met with a large fleet of Swedish merchant-men, and having obliged them to bring to, and submit to be searched, he found just grounds to believe that most of their cargoes belonged to French merchants, upon which he sent them to Plymouth, which afterwards appeared to be as he supposed, a good prize. During king William's reign, Sir George was twice elected member for Portsmouth, and upon the accession of queen Anne in 1702, he was constituted vice-admiral and lieutenant of the admiralty of England, as also lieutenant of the fleets and seas of this kingdom. Upon the declaration of war against France, Sir George Rooke was ordered to command a fleet sent against Cadiz, the duke of Ormond having the command of the land forces. On his passage home receiving an account that the gal-

leons, under the effort of a strong French squadron, were got into the harbour of Vigo, he resolved to attack them; and on the 11th of October came before the harbour of Roudondella, where the French commodore had neglected nothing necessary for putting the place into the best posture of defence; but notwithstanding this, a detachment of fifteen English, and ten Dutch men of war of the line of battle, with all the fireships, were ordered in; the frigates and bomb vessels followed; the great ships moved after them, and the army landed near Rodondella. The whole service was performed under Sir George's directions with admirable conduct and bravery; for, in short, all the ships were destroyed or taken, great damage done to the enemy, and vast wealth acquired by the allies. For this action Sir George received the thanks of the house of commons, a day of thanksgiving was appointed both by the queen and the states-general, and Sir George was given a seat in the privy-council; but the house of lords resolved to enquire into his conduct at Cadiz, when he so fully justified himself, that a vote was passed approving his behaviour. In the spring of the year 1704, Sir George commanded the ships of war which convoyed king Charles III. of Spain to Lisbon; and in July he attacked Gibraltar, when the place was taken on the 24th, though the town was extremely strong, and well furnished with ammunition, and had a hundred guns mounted, all facing the sea, and the narrow passes to the land. There was now no appearance of there being any farther engagement; but on the 9th of August, the fleet returning from taking in water on the coast of Barbary to Gibraltar, the French fleet, under the command of the count de Thoulouse, was seen at sea, and Sir George resolved to do all in his power to force an engagement; he therefore pursued the fleet, which endeavoured to avoid coming to an engagement, and on the 17th forced one of their ships on shore, on which the crew quitting her, set her on fire, and she blew up. Sir George on his return home retired from public business, and spent the remainder of his days at his seat in Kent, as a private gentleman, and at length died of the gout the 24th of January, 1708-9, aged 58 years.

ROOT, *Radix*, among botanists, that part of a plant which imbibes the nutritious juices of the earth, and transmits them to the other plants. The roots of plants

plants are distinguished, according to their different forms, into bulbous, fibrous, granulose, grumose, tuberose, and tap-roots. As to the gathering and preserving roots for medicinal uses, the Edinburgh Dispensatory directs, that the annual roots be taken up before they shoot out stems or flowers; the biennial ones, for the most part, in the autumn of the first year; and the perennial ones when the leaves begin to fall, and therefore generally in autumn: then being cleansed by washing, and freed from the withered and decayed fibres, they are to be hung in a shady place previous to the air, till they are moderately dry: the thicker roots should be slit lengthwise; or they may be cut transversely into thin pieces, and the pith taken out.

ROOT, in mathematics, implies a quantity considered as the basis or foundation of a higher power; or one which being multiplied into itself any number of times, produces a square, cubic, bi-quadratic, &c. quantity; called the second, third, fourth, &c. power of the root, or quantity, so multiplied into itself. Thus a is the square root of $a \times a$, or a^2 ; and 4 the square root of $4 \times 4 = 16$. Again, a is the cube root of $a \times a \times a = a^3$; and 3 the cube-root of $3 \times 3 \times 3 = 27$; and so on. See *Extraction*.

ROOTS, *Radices*, in grammar, the primitive words of a language, whence the others are formed or derived.

ROPE, hemp, hair, &c. spun out into a thick yarn, and then several strings of this yarn twisted together by means of a wheel. When made very small, it is called a cord, and when very thick, a cable.

ROPE, a general name given to all the different kinds of rope in a ship. See *Rigging*, *Cable*, &c.

ROPE-BANDS, a small cord, in length about three or four times the circumference of the yard. They are inserted through eye-lid holes for the whole length of the upper-edge of the square sails, and are used to fasten the head of the sail to the yard.

ROPE-YARN, a thread or twisted line of hemp, which is the first and simplest part of a rope. A number of these are twisted together to form a strand, in proportion to the size of the rope, whereof the strand makes a part. Three strands are then twisted into one another, which completes the process of ordinary rope-making. But cables, hawsers, and other ground-tackling, are com-

posed of three strands, each of which is formed by three lesser ones.

ROSACEOUS, among botanists, an appellation given to such flowers, as are composed of several petals or leaves, disposed in a sort of circular form, like those of the rose: such are the flowers of the plony, crowfoot, cinquefoil, &c.

* ROSAMOND (usually called Fair Rosamond) the mistress of Henry II. was the daughter of Walter lord Clifford, a baron of Herefordshire, and a lady of incomparable beauty, whom Henry fell in love with and seduced in 1149, during the short stay he made in the west of England, before he went to join the Scotch at Carlisle, and when he was little more than 16 years of age; for after that time he never was in England till the beginning of the year 1153, and it does not appear that she went with him into France. Upon his return to England he renewed his amour with her, and as he was then married, he might probably be afraid of Eleanor's jealousy, and solicitous to hide his intrigue from her knowledge, and this may have given rise to the romantic tradition of his having built Rosamond's bower, a kind of labyrinth, in the palace of Woodstock, to conceal his mistress from the sight and vengeance of his queen. But the tale of her being poisoned in that place by Eleanor has no foundation. Before Rosamond's death she retired to the nunnery of Godstow, near Oxford; and after her retreat from the world and her lover, seems to have lived the life of a penitent, and to have died in the communion of the church. Her remains were interred in the church near the high altar, in a tomb covered with silk, and over them was this inscription, with this jingling Latin epitaph:

*Hic jacet in tumba rosa mundi non rosa munda;
Non redoluit, sed olet, qua redolere solet.*

Which Speed has thus rendered into English:

This tomb doth here inclose
The world's most beauteous rose;
Rose passing sweet e'er while,
Now nought but odour vile.

Henry bestowed large revenues on the convent, in return for which he required that lamps should be kept perpetually burning about the remains of this lady. But in the reign of his successor, Hugh, bishop of Lincoln, commanded them to

be taken away, as being unworthy of so holy a place, upon which they were removed to the chapter-house of the nunnery, and there interred. This lady had two sons by the king, William, who was born in 1150, and married the daughter and heiress of lord Salisbury; and Geoffrey, born in 1153, who was at about twenty years of age made archbishop of York.

ROSARY, among the Roman-Catholics, the same with chaplet.

* **ROSBACH**, battle at. This battle was fought by the present king of Prussia, and is, perhaps, the most illustrious of all his victories; inasmuch, as his situation a few weeks before was indeed the most deplorable, hemmed in on every side, he scarce knew what to do; at length, providence relieved him, and wonderfully changed the scene. He deferred bringing on a decisive action till the winter. He suffered the army of the empire to advance to the frontiers of Misnia, and even to threaten the siege of Leipzig, before he began to act against them; he then moved towards them, leaving an army in Lusatia, to observe the Austrians. On his first motions, the enemy retired with precipitation. But when they had reinforced themselves with numbers and courage, sufficient to persuade them to advance, the king of Prussia in his turn retired. His resolution seemed to have been to fight as near Misnia as possible, and as deep in the winter as he conveniently might; for if he should have the good fortune to succeed against the imperial army, such a blow at such a season, would effectually disable them from acting any thing to his prejudice, for that year at least; but if, on the contrary, he should fail, Saxony was at hand, in which it would prove difficult for the enemy to make any impression whilst the winter continued. As for the time to be lost by following this plan, and the advantage it would afford the Austrians in their design on Silesia, they were not to be compared with the advantages which the king received from it. He knew that Schweidnitz was strong, and excellently provided; the prince of Bevern was strongly posted near it, to obstruct the enemies operations; the winter would lean heavier on the besiegers; and on the whole he had reason to trust that his troops, animated by his own presence and example, would prove far superior to the enemy, in enduring all the hardships of a winter campaign.

After some time spent in various movements, between the allied army of the Imperialists and French on one side, and the Prussians on the other, the king resolved to give battle to his enemies, who were now advanced to the confines of Misnia. On the twenty-fourth of October, 1757, the king had taken his resolution; at that time his army happened to be divided into several corps, some of them at a distance of no less than twenty leagues asunder; yet such were the spirit and excellent disposition of the Prussians, that the junction of all these corps was fully effected on the twenty-seventh, and the king advanced towards the enemy. The enemy fell back at his approach, and repassed the Sala; they were followed close. The two armies met near the village of Rosbach, on the fifth day of November. The united army, commanded by the prince of Saxe Hildburghausen, and the prince of Soubise, was fifty thousand men complete. But the troops of the circles were new raised, and many of them not well affected to the service, nor to their French allies. The Prussians did not amount to twenty-five thousand; but then they were Prussians, and led on by the king of Prussia. As soon as the armies were formed, and the battle going to begin, which was to decide the fate of so many nations, and to determine between force and virtue, the king of Prussia addressed his troops nearly in the following words. "My dear friends, the hour is come, in which all that is, and all that ought to be dear to us, depends upon the swords which are now drawn for the battle. Time permits me to say but little; nor is there occasion to say much. You know that there is no labour, no hunger, no cold, no watching, no danger, that I have not shared with you hitherto; and you now see me ready to lay down my life with you, and for you. All I ask is the same pledge of fidelity and affection, that I give. And let me add, not as an incitement to your courage, but as a testimony of my own gratitude; that from this hour, until you go into quarters, your pay shall be double. Acquit yourselves like men, and put your confidence in God." The effect of this speech was such, as cannot be described. The general emotion burst in an universal shout, and the looks and demeanor of the men were animated to a sort of heroic phrenzy. In this disposition, which prognosticated good success, the engagement

ment began. In the beginning of the action, the French cavalry came on with great spirit, but they were repulsed; some regiments having gained an eminence, defended themselves bravely, but in the end they were totally routed. The infantry, both French and Imperialists, made but a faint resistance. The king of Prussia in person exposed to the hottest fire, led on his troops; the enemy gave way in every part: they were seized with a panic, and fled in the utmost disorder. They left three thousand men dead on the field of battle; sixty-three pieces of cannon, and many colours. Eight French generals, two hundred and fifty officers of different ranks, and six thousand private men were taken. Night alone saved from total destruction the scattered remains of an army, that in the morning was so numerous and so formidable. The glorious success of the battle of Rosbach, was such as hardly wanted to be improved; the enemy was left totally incapable of action. The king was set free on that side; but it was a freedom which gave him no respite from his labours; it only gave him an opportunity of undergoing new labours in another part.

* ROSCOMMON, (Wentworth Dillon, earl of) a celebrated poet of the 17th century, was the son of James Dillon, earl of Roscommon, and was born in Ireland. He also passed his infancy in Ireland, after which the earl of Strafford sent for him into England, and placed him at his own seat in Yorkshire, under the tuition of Dr. Hall, afterwards bishop of Norwich, who instructed him in Latin, without teaching him the common rules of grammar, which he could never retain in his memory, though he learnt to write in that language with classical elegance and propriety. On the earl of Strafford's being impeached, he went to complete his education at Caen, in Normandy, and afterwards travelled to Rome, where he became acquainted with the most valuable remains of antiquity, and in particular was well skilled in medals, and learned to speak Italian with such grace and fluency, that he was frequently mistaken for a native. He returned to England soon after the Restoration, and was made captain of the band of pensioners; but a dispute with the lord-privy-seal, about a part of his estate, obliged him to resign his post, and revisit his native country, where the duke of Ormond appointed him captain

of the guards. He was very fond of gaming, and as he was returning to his lodgings, from a gaming table in Dublin, was attacked in the dark by three ruffians, who were employed to assassinate him. The earl defended himself with such resolution, that he had dispatched one of the aggressors, when a gentleman passing that way took his part, and disarmed another, on which the third sought his safety in flight. This generous assistant was a disbanded officer of good family and reputation; but reduced to poverty; and his lordship rewarded his bravery by resigning to him his post of captain of the guards. He at length returned to London, when he was made master of the horse to the duchess of York, and married the lady Frances, eldest daughter of Richard earl of Burlington. He here distinguished himself by his writings, and in imitation of those learned and polite assemblies, with which he had been acquainted abroad, began to form a society for refining and fixing the standard of the English language, in which he was assisted by Mr. Dryden. At length being seized with the gout, and a French physician applying a repelling medicine, to give him present ease, it drove the distemper into his bowels, and put a period to his life in January, 1684. The moment in which he expired, he cried out with a voice expressive of the fervour of devotion:

My God, my father, and my friend,
Do not forsake me at my end.

He was interred in Westminster-abbey. He wrote, 1. An essay on translated verse. 2. Horace's art of poetry, translated into English blank verse, and several other poems. Mr. Pope, in his essay on Criticism, bestows on him the following elegant compliment:

— Roscommon not more learn'd than good,
With manners gen'rous as his noble blood;
To him the wit of Greece and Rome was known,
And ev'ry author's merit but his own.

ROSE, *Rosa*, in botany, a genus of plants, the flower of which is composed of five petals, obversely cordated, and arranged in a circular form: the fruit is formed of the fleshy base of the cup, which is of a turbinated figure, coloured, soft, containing only one cell drawn together at the neck, and coronated with some irregular laciniae; the seeds are nume-

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merous, oblong, and hairy. The wild briar, with beautiful pinnated leaves, a white or pale red flower, and the common hip for its fruit, is that above described: and, indeed, all the beautiful roses in our gardens are only varieties of this species, principally owing to culture; the red, the damask, the white, the variegated, &c. roses, being all produced from this original species. The flowers of the red rose are astringent, those of the damask rose purgative, and the fruit of the wild rose pectoral. The rose-water of the shops, distilled from the flowers of the damask-rose, has been celebrated for many virtues; but its fragrant smell is the only quality now regarded in it. There is also a syrup, made either from the juice, or infusion of the fresh flowers of damask roses.

ROSE, in architecture, an ornament cut in the form of a rose, chiefly used in corniches, friezes, vaults of churches, &c. and particularly in the middle of each face in the Corinthian abacus.

ROSE-NOBLE, an ancient English gold coin, first struck in the reign of Edward III. It was formerly current at 6 s. 8 d. and so called because stamped with a rose.

ROSEMARY, in botany, a large shrubby plant, clothed with long narrow stiff leaves, set in pairs, of a dark green colour above, and hoary underneath; producing pale bluish labiated flowers, which stand in clusters round the stalk in the bosoms of the leaves. It is a native of the southern parts of Europe, common in our gardens, and seems to grow larger and more woody in this than in most other countries. It flowers in April and May, and sometimes again about the end of August. Rosemary is a warm pungent aromatic; particularly useful in phlegmatic habits, and debilities of the nervous system; of the same general nature with lavender, but with more of a camphorated kind of pungency, and of a stronger, and to most people less grateful smell. The tender tops are the strongest both in smell and taste, and next to these the cups of the flowers; which last, though somewhat weaker than the leaves or tops, are nevertheless the most pleasant, and hence are generally preferred. It is chiefly, if not wholly, in the cup that the active matter of the flower resides; for the bluish petalum, carefully separated, has very little smell or taste. The fragrance of these flowers is greatly diminished, or in great measure

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destroyed, by bruising or beating; and hence the official conserve, made by beating them with thrice their weight of sugar, has very little of the flavour of the rosemary. The leaves and tops of rosemary give out their virtues completely to rectified spirit, but only partially to water: the spirituous tinctures are of a yellowish green colour, the aqueous of a dark greenish brown. Distilled with water, they yield a thin, light, pale-coloured essential oil, inclining a little to a yellowish or greenish, of great fragrancy, though not quite so agreeable as the rosemary itself: from one hundred pounds of the herb in flower were obtained eight ounces of oil: the decoction, thus divested of the aromatic part of the plant, yields on being inspissated an unpleasant weakly bitterish extract. Rectified spirit likewise, distilled from rosemary leaves, becomes considerably impregnated with their fragrance, leaving however in the extract the greatest share both of their flavour and pungency. The active matter of the flowers is somewhat more volatile than that of the leaves, greatest part of it arising with spirit. The Hungary water, used as a perfume, and sometimes medicinally in nervous complaints, and which is said to have received its name from its being first made public by an empress of that nation, who was cured by its continued use of a paralytic disorder, is a strong spirit distilled from fresh rosemary flowers: the college of Edinburgh directs a gallon of rectified spirit to be drawn over in the heat of a water-bath from two pounds of the flowers as soon as gathered: that of London takes the tops, and a spirit not quite so strong; putting a gallon of proof spirit to a pound and a half of the fresh tops, and drawing off in the heat of a water-bath five pints. The Hungary water brought from France is more fragrant than such as is generally prepared among us.

ROSTRA, in antiquity, a part of the Roman forum, wherein orations, pleadings, funeral harangues, &c. were delivered.

ROSTRUM, in chemistry, the nose or beak of the common alembic, which conveys the liquor distilled into its receiver.

ROT, a disease incident to sheep, arising from wet seasons, and too moist pasture. It is a very hard thing to prevent the rot, if the year proves very wet, especially in May and June. Salt-marshes, and

and lands where broom grows, are the best places of preservation for them. Sheep are sometimes all cleared of the rot, when not too far gone with it, only by removing them into broom-fields. Scurvy-grass, mustard, parsley, and thyme, are also good for the prevention of it. Some propose the giving sheep half a handful of bay-salt every month or oftener; and there is great probability that this may be of service. But the rational way of attacking all disorders in cattle is, by considering what are the causes of them. It will appear upon enquiry, that wet seasons are the general occasions of the rot in sheep; and therefore it would be advisable for the owners, when such seasons come on, to remove those animals into the driest pastures they can, and then to feed them principally with dry sweet hay, oats, bran, and the like: this would prevent the occasion; and if they were already a little infected, some salt given with their dry food would be a happy means of curing them.

ROTA, WHEEL, in mechanics. See *Wheel*.

ROTATION, in geometry, a term chiefly applied to the circumvolution of any surface round a fixed and immovable line, which is called the axis of its rotation: and by such rotations it is that solids are conceived to be generated.

ROTATOIRES, in anatomy, the name by which some call the oblique muscles of the eye.

ROTATOIRES is also applied to the trochanters of the thigh-bone.

ROTONDO, or ROTUNDO, in architecture, an appellation given to any building that is round both within and without side, whether it be a church, a salon, or the like. The most celebrated *rotondo* of the ancients is the Pantheon at Rome.

* ROTTERDAM, a large, handsome, and strong town in the United Provinces, in Holland, with one of the finest harbours in the Netherlands, which renders it a place of very considerable trade. It is the most considerable place in Holland, for extent, the beauty of its buildings, for trade, and for riches, next to Amsterdam. The whole city may be said to be a harbour, there is such a great number of fine deep canals, that will bear the greatest ships, and they may unload them at the very doors of the magazines. The town is governed by a regency, consisting of twenty-four counsellors,

and four burgo-masters. There are a great many handsome buildings, and the town-house, the bank, those of the East India company, and the arsenals, are very magnificent. It is more frequented by British merchants than Amsterdam, because the ice departs sooner, and because a single tide in two or three hours will carry a vessel into the open sea. Erasmus was born here, and his statue in bronze is still to be seen. It is seated on the river Maese, thirteen miles S. E. of the Hague.

ROTULA, in anatomy, the same with the patella.

ROFUNDUS, in anatomy, a name given to several muscles, otherwise called *teres*.

ROUNDELAY, a kind of ancient poem, thus termed, according to Menage, from its form, because it turns back again to the first verse, and thus goes round.

ROUND-HOUSE, in naval architecture, a sort of cabin raised on the after-part of a ship's quarter-deck in the merchant service. It is usually the apartment of the captain, but occasionally of other officers, or passengers.

ROUNDING, in sea affairs, certain pieces of old rope firmly wound about that part of the cable which is liable to be chafed or fretted against the stem, bows, or cut-water. The rounding is drawn very tight about the cable, and beat on with a mallet.

ROUNDING up a Tackle, the act of drawing the block or pulleys together when no weight is suspended by it.

ROUND, ROUNDELAY, in music, a kind of burden or ritornello, where the beginning of each couplet is repeated at the end thereof.

ROUT, a public road, highway, or course, especially that which military forces take. This word is also used for the defeat and flight of an army.

* ROWE, ELIZABETH, a lady eminent for her writings, was the eldest daughter of Mr. Walter Singer, and was born at Ilchester in Somersetshire, the 11th of September 1674. She was well educated, and had in her infancy a good taste in painting, poetry, and music. She began to write verses at twelve years of age, and was but twenty-two in 1696, when she published a collection of her poems. She had no other tutor for the French and Italian than the honourable Mr. Thynne, son to lord viscount Weymouth; and she improved so fast under

his lessons, that in a few months she was able to read Tasso's *Jerusalem* with great ease. Her shining merit, and the charms of her person, procured her many admirers; but Mr. Thomas Rowe, an ingenious and learned gentleman, distinguished by the liveliness of his disposition, married her in 1710; but he died the 13th of May 1715. She wrote a very tender elegy on his death, and continued till the last moments of her life to express the highest veneration and affection for his memory; and after that melancholy event, generally resided at Frome in Somersetshire, where the greatest part of her estate lay, and where she lived in retirement, and devoted herself to study, to the exercises of religion, and charity. She seldom quitted her retreat, and when she did, it was in complaisance to some illustrious ladies, and particularly the countess of Hertford, between whom there subsisted a very tender friendship. Though she had all the personal graces and mental endowments that could be desired, she would never consent to a second marriage, and died suddenly at Frome, the 20th of February 1737. A pious book was found lying open by her, and in her cabinet were found letters to several of her friends, which she had ordered to be delivered to those to whom they were directed, immediately after her decease. She wrote, 1. *The History of Joseph*, an heroic poem. 2. *Friendship in death*, and *Letters moral and entertaining*. 3. *Devout Exercises of the Heart*, which the reverend Dr. Isaac Watts, according to her request, revised and published. 4. *Miscellaneous Works*, two volumes. This excellent lady, who was admired as much for her piety and many virtues, as her other accomplishments, was favoured with the esteem and acquaintance of many persons of the first distinction.

ROWE, NICHOLAS, a celebrated English poet, was the son of John Rowe, Esq; serjeant at law, and was born at Little Berkford in Bedfordshire, in 1673. He studied at Westminster school, under Dr. Busby; but poetry was his darling study, and he at that time composed several copies of verses upon different subjects, both in Greek, Latin, and English, which were much admired. At sixteen years of age he entered the Middle Temple, where he made remarkable advances in the study of the law, and was afterwards called to the bar; but his first tragedy, the *Ambitious Step-mother*,

meeting with universal applause, the spirit of poetry got the ascendant over him, and he laid aside all thoughts of raising himself by the law, and afterwards wrote several tragedies, among which was *Tamerlane*. His other tragedies are, the *Fair Penitent*, *Ulysses*, the *Royal Convert*, *Jane Shore*, and the *Lady Jane Gray*. He wrote a comedy called the *Biter*, which did not meet with success, and many poems on different subjects, which were published in one volume duodecimo. Being a great admirer of Shakespeare, he obliged the public with a new edition of his works. But Mr. Rowe's last, and perhaps most excellent performance, was his translation of *Lucan*. This gentleman's fondness for the muses did not disqualify him for business. The duke of Queensberry, secretary of state, made him secretary for public affairs, and was never so well pleased as in Mr. Rowe's company; but after that nobleman's death, all avenues were stopped to his preferment. It is said, indeed, that he went one day to pay his court to the earl of Oxford, lord high treasurer of England, who asked him, if he understood Spanish well? He answered, No; but imagining his lordship might intend to send him into Spain on some honourable commission, he immediately added, that he did not doubt but that in a short time he should be able both to understand and speak it. When the earl approving of what he said, Mr. Rowe took his leave, and immediately retired to a private country farm, and having in a few months learned the Spanish tongue, waited again on the earl, to give him an account of his diligence. His lordship asked him, if he perfectly understood it? and Mr. Rowe answering in the affirmative, the earl, to his no small disappointment, burst into an exclamation, "How happy are you, Mr. Rowe, that you can enjoy the pleasure of reading and understanding the history of *Don Quixotte* in the original!" However, upon the accession of George I. to the throne, he was made poet laureat, and a land-surveyor of the customs. The prince of Wales conferred on him the post of clerk of his council, and the lord chancellor Parker made him his secretary of the presentations. He died the 6th of December 1718, in the forty-sixth year of his age: and as he was always remarkable for his piety, virtue, and sweetness of disposition, he kept up his good humour to the last, and took leave of his wife

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wife and friends, immediately before his last agony, with the same tranquillity of mind as though he had been upon taking only a short journey. He was interred with great solemnity in Westminster abbey, and a fine monument was erected to his memory, and to that of his daughter. On a pedestal about twenty inches high, which stands on an altar, is his bust, which is a very fine one, and near it is his lady in the deepest affliction: between both, on a pyramid behind, is a medallion, with the head of a young lady in relief; and on the front of the pedestal is this inscription.

To the memory of Nicholas Rowe, Esq; who died in 1718, aged forty-five, and of Charlotte, his only daughter, wife of Henry Fane, Esq; who inheriting her father's spirit, and amiable in her own innocence and beauty, died in the twenty-third year of her age, 1739.

Underneath, upon the front of the altar, are these lines:

Thy reliques, Rowe, to this sad shrine
we trust,

And near thy Shakespeare place thy honour'd bust.

Oh! skill'd, next him, to draw the tender tear,

For never heart felt passion more sincere:
To nobler sentiments to fire the brave,

For never Briton more disdain'd a slave!
Peace to thy gentle shade, and endless rest,

Blest in thy genius, in thy love, too, blest!
And blest, that timely from our scene

remov'd,

Thy soul enjoys that liberty it lov'd.

To these, so mourn'd in death, so lov'd
in life,

The childless mother, and the widow'd
wife,

With tears inscribes this monumental
stone,

That holds their ashes, and expects her
own.

ROWER, in naval affairs, one who manages the oars in a small ship, boat, or galley: and hence,

ROWING, the art of managing the oars so as to move a vessel through the water. In this situation the oars act upon the vessel like a lever, whose fulcrum is the upper part of the vessel's side: and,

ROW-LOCK, is the notch or opening in the side of the boat or galley, where

RUB

the oar rests. In boats it is commonly limited by two pins, which are called thowles.

ROW-PORTS, little holes in the sides of a ship of war, wherein to thrust the oars when it is necessary to row.

ROWEL, among farriers, a kind of issue, made by drawing a skain of silk, thread, hair, or the like, through the nape of the neck, or other part of a horse; answering to what, in surgery, is called a seton. See *Seton*.

ROYALTIES, the rights of the king, otherwise called the king's prerogative, and the regalia.

RUBIA, madder, in botany, &c. See *Madder*.

RUBIGO, a disease incident to corn, commonly called mildew, being a species of blight. See *Blight*.

RUBRIC, in the canon-law, signifies a title or article in certain ancient law-books; thus called because written, as the titles of the chapters in our ancient bibles are, in red letters.

RUBRICS also denote the rules and directions given at the beginning, and in the course of the liturgy, for the order and manner in which the several parts of the office are to be performed. There are general rubrics and special rubrics, a rubric for the communion, &c. In the Romish Missal and Breviary are rubrics for matins, for lauds, for translations, beatifications, commemorations, &c.

RUBUS, the bramble, in botany, a genus of plants.

RUBY, *rubinus*, in natural history, a species of the chrostasima class of gems, being a beautiful gem of a red colour, with an admixture of purple. See *Gem*.

This, in its most perfect and best coloured state, is a gem of prodigious beauty and extreme value; it is often found perfectly pure and free from blemishes or foulness, but much more frequently debased greatly in its value by them, especially in the larger specimens. It is of very great hardness, equal to that of the sapphire, and second only to the diamond. It is various in size, but less subject to variations in its shape than most of the other gems. It is usually found very small, its most common size being equal to that of the head of the largest sort of pins; but it is found of four, eight, or ten carats; and sometimes, though very rare, up to twenty, thirty, or forty. It is never found of an angular or chrysaliform shape, but always of a pebble-like figure, often roundish,

roundish, sometimes oblong, and much larger at one end than at the other, and in some sort resembling a pear, and is usually flattened on one side. It commonly is naturally so bright and pure on the surface, as to need no polishing; and when its figure will admit of being set without cutting, it is often worn in its rough state, and with no other than its native polish. Our jewellers are very nice, though not perfectly determinate, in their distinctions of this gem, knowing it, in its different degrees of colour, under three different names: the first is simply the ruby, the name given it in its deepest coloured and most perfect state: the second is the spinel-ruby; under this name they comprehend those rubies which are of a somewhat less bright colour than the ruby simply so called: the third is the balass-ruby; under this name they express a pale yet a very bright ruby, with a less admixture of the purple tinge than in the deeper coloured one; this is of less value than the deeper one. We have the true ruby only from the East Indies; and the principal mines of it are in the kingdom of Pegu and the island of Ceylon. We have in Europe crystals tinged to the colour of the ruby, but they have nothing of its lustre or hardness. The ruby seems to owe its colour to gold, it being possible to separate a small portion of gold from the little native rubies, and also to give the true colour of the ruby to fictitious paste by means of that metal. The way of preparing a metalline colour from gold and tin, for-tinging glass of a ruby colour, is, according to Shaw, as follows: Dissolve gold in aqua regia, and dilute the fine yellow solution with a large proportion of fair water; to the mixture add a sufficient quantity of a saturated solution of tin, made also in aqua-regia, at several times, and a most beautiful red or purple coloured powder will soon fall to the bottom of the containing glass: decant the liquor and dry the powder, a few grains whereof being melted along with white crystalline glass, will tinge it throughout of an extremely fine purple or ruby colour.

RUBY, in heraldry, denotes the red colour wherewith the arms of noblemen are blazoned; being the same which in the arms of others, not noble, is called gules.

RUCTATION, **BELCHING**, a ventosity arising from indigestion, and discharging itself at the mouth with a very

disagreeable noise. There are belches owing to repletion, and others to inanition, or emptiness. Quincy says, hypochondriac and hysteric persons are particularly liable to this disorder. They are rather to be cured with proper stomachics than carminatives and hot liquors.

RUDDER, in naval architecture, a piece of timber, or several pieces fastened together, and fitted to the ship's stern-posts, to which it is hung by irons, whereon it moves, and thereby the ship is steered.

RUDBECKIA, **DWARF SUN-FLOWER**, in botany, a genus of plants, the compound flower of which is radiated; but the hermaphrodite corollulæ of the disc are tubulose and very numerous: the stamina are five very short capillary filaments; and there is a small orbiculated seed after each of the hermaphrodite corollulæ, and are all contained in the cup, affixed to a paleaceous receptacle.

RUDENTURE, in architecture, the figure of a rope or staff, sometimes plain sometimes carved, with which the third part of the flutings of columns are frequently filled up.

RUDERATION, in building, a term used by Vitruvius for the laying of pavement with pebbles. To perform the ruderation it is necessary that the ground be well beaten, to make it firm, and to prevent it from cracking; then a stratum of little stones are laid, to be afterward bound together with mortar made of lime and sand. If the sand be new, its proportion may be to the lime as three to one; if dug out of old pavement or walls, as five to two.

RUDIMENTS, *Rudimenta*, the first principles or grounds of any art or science, called also the elements thereof. See *Element*.

RULE, in matters of literature, a maxim, canon, or precept, to be observed in any art or science.

RULE, in arithmetic, denotes an operation performed with figures, in order to discover sums or numbers unknown. The fundamental rules are addition, subtraction, multiplication, and division. See *Addition*, &c.

But, besides these, there are other rules denominated from their use; as the rule of alligation, fellowship, interest, practice, reduction, &c.

RULE of Three, or *Rule of Proportion*, commonly called the *Golden Rule*, a rule which teaches how to find a fourth proportional to three given numbers.

The

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This rule is either direct, or reciprocal, called inverse. And those are both simple and compound

RULE of Three Direct, or direct Proportion, is when, of four numbers, the first beareth the same ratio or proportion to the second as the third doth to the fourth.

As in these, $2 : 8 :: 6 : 24$.

Consequently, the greater the second term is, in respect to the first, the greater will the fourth term be, in respect to the third.

That is, as 8 the second term, is four times greater than 2, the first term; so is 24, the fourth term, four times greater than 6, the third term.

Whence it follows, that, if four numbers are in direct proportion, the product of the two extremes will always be equal to the product of the two means, as well in disjunct, as continued proportion,

For as $2 : 2 \times 4 :: 6 : 6 \times 4$. Or as
 $3 : 3 \times 5 :: 6 : 6 \times 5$, or $3 \times 6 \times 5 = 3 \times$
 5×6 .

But $2 \times 6 \times 4 = 2 \times 4 \times 6$.

That is, the product of the extremes is equal to that of the means.

Again, the less the second term is, in respect to the first, the less will the fourth term be, in respect to the third.

As in these, $2 : 8 :: 6 : 24$. Here $8 \times 6 = 48 = 24 \times 2$.

But, if $24 \times 2 = 48$, then will $48 \div 2 = 24$, or $48 \div 24 = 2$.

Note, any four numbers in direct proportion may be varied several ways. As in these,

Viz. if $2 : 8 :: 6 : 24$, then $2 : 6 :: 8 : 24$, and $6 : 24 :: 2 : 8$, or $24 : 6 :: 8 : 2$, &c.

These variations, being well understood, will be of no small use in the true stating of any question in the Rule of Three.

All questions in direct proportion may be answered by three several theorems.

Theorem 1. Multiply the second and third terms together, and divide your product by the first term; the quotient will be the answer required.

yds. shill.		yds. shill.	
1	0	1	0
2	0	2	0
3	0	3	0
4	0	4	0
5	0	5	0
6	0	6	0
7	0	7	0
8	0	8	0
9	0	9	0
10	0	10	0
11	0	11	0
12	0	12	0
13	0	13	0
14	0	14	0
15	0	15	0
16	0	16	0
17	0	17	0
18	0	18	0
19	0	19	0
20	0	20	0
21	0	21	0
22	0	22	0
23	0	23	0
24	0	24	0
25	0	25	0
26	0	26	0
27	0	27	0
28	0	28	0
29	0	29	0
30	0	30	0
31	0	31	0
32	0	32	0
33	0	33	0
34	0	34	0
35	0	35	0
36	0	36	0
37	0	37	0
38	0	38	0
39	0	39	0
40	0	40	0
41	0	41	0
42	0	42	0
43	0	43	0
44	0	44	0
45	0	45	0
46	0	46	0
47	0	47	0
48	0	48	0
49	0	49	0
50	0	50	0
51	0	51	0
52	0	52	0
53	0	53	0
54	0	54	0
55	0	55	0
56	0	56	0
57	0	57	0
58	0	58	0
59	0	59	0
60	0	60	0
61	0	61	0
62	0	62	0
63	0	63	0
64	0	64	0
65	0	65	0
66	0	66	0
67	0	67	0
68	0	68	0
69	0	69	0
70	0	70	0
71	0	71	0
72	0	72	0
73	0	73	0
74	0	74	0
75	0	75	0
76	0	76	0
77	0	77	0
78	0	78	0
79	0	79	0
80	0	80	0
81	0	81	0
82	0	82	0
83	0	83	0
84	0	84	0
85	0	85	0
86	0	86	0
87	0	87	0
88	0	88	0
89	0	89	0
90	0	90	0
91	0	91	0
92	0	92	0
93	0	93	0
94	0	94	0
95	0	95	0
96	0	96	0
97	0	97	0
98	0	98	0
99	0	99	0
100	0	100	0

Thus $3 : 9 :: 6 : 18$ the anfw.

3) 54(.8 mill. } Because the second term was mill.

Theorem 2. Divide the second term by the first, and multiply the quotient into the third term, and the product will be the answer required.

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yds.	Shill.	yds.	Shill.
10	0	10	0
20	0	20	0
30	0	30	0
40	0	40	0
50	0	50	0
60	0	60	0
70	0	70	0
80	0	80	0
90	0	90	0
100	0	100	0
110	0	110	0
120	0	120	0
130	0	130	0
140	0	140	0
150	0	150	0
160	0	160	0
170	0	170	0
180	0	180	0
190	0	190	0
200	0	200	0
210	0	210	0
220	0	220	0
230	0	230	0
240	0	240	0
250	0	250	0
260	0	260	0
270	0	270	0
280	0	280	0
290	0	290	0
300	0	300	0
310	0	310	0
320	0	320	0
330	0	330	0
340	0	340	0
350	0	350	0
360	0	360	0
370	0	370	0
380	0	380	0
390	0	390	0
400	0	400	0
410	0	410	0
420	0	420	0
430	0	430	0
440	0	440	0
450	0	450	0
460	0	460	0
470	0	470	0
480	0	480	0
490	0	490	0
500	0	500	0
510	0	510	0
520	0	520	0
530	0	530	0
540	0	540	0
550	0	550	0
560	0	560	0
570	0	570	0
580	0	580	0
590	0	590	0
600	0	600	0
610	0	610	0
620	0	620	0
630	0	630	0
640	0	640	0
650	0	650	0
660	0	660	0
670	0	670	0
680	0	680	0
690	0	690	0
700	0	700	0
710	0	710	0
720	0	720	0
730	0	730	0
740	0	740	0
750	0	750	0
760	0	760	0
770	0	770	0
780	0	780	0
790	0	790	0
800	0	800	0
810	0	810	0
820	0	820	0
830	0	830	0
840	0	840	0
850	0	850	0
860	0	860	0
870	0	870	0
880	0	880	0
890	0	890	0
900	0	900	0
910	0	910	0
920	0	920	0
930	0	930	0
940	0	940	0
950	0	950	0
960	0	960	0
970	0	970	0
980	0	980	0
990	0	990	0
1000	0	1000	0

Thus $3 \mid 9 (= 3)$, then $3 \times 6 = 18$, as before.

RULE of Three Inverse, or reciprocal Proportion, is, when of four numbers, the third, (viz. that which moves the question) beareth the same ratio to the first, as the second does to the fourth.

Therefore, the less the third term is, in respect to the first, the greater will the fourth term be in respect to the second.

Example 1. If 16 men can do a piece of work in 6 days, how many days must 8 men require to do the same work, at the same rate of working?

Here it is plain, that 8 men must needs have more time than 16 men, to do the same work. Consequently, the greater the third term is, in respect to the first, the less will the fourth term be, in respect to the second.

Example 2. If 8 men can do a piece of work in 8 days, how many days will 16 men require to do the same work? Here it is plain, the fourth term must be less than the second, because 16 men undoubtedly can do the same work in less time than 8 men can.

For when, according to the true meaning or design of any question in proportion, more requires more, or less requires less, the terms are in direct proportion.

But if more requires less, or less requires more, as above, then the terms will be in reciprocal proportion.

The manner of placing down the proposed terms is the same in both rules, viz. The first term in the supposition must be of the same kind and denomination with the third term, which moves the question; and the term sought must be of the same kind and denomination with the second term in the supposition; as in the two last examples.

Men Days Men.

Thus in $\left\{ \begin{array}{l} \text{Example 1. } 16 : 6 :: 8 \\ \text{Example 2. } 8 : 12 :: 16 \end{array} \right.$

The question being truly stated, observe this theorem.

Theorem. Multiply the first and second terms together, and divide their product by the third term; the quotient will be the answer required.

Thus in the second example, $12 \times 8 = 96$.

Then $16 \div 96 (= 6 \text{ days, the answer required.})$

That is 16 men may do the same work in

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in 6 days, as 8 men can do in 12 days.

The reason of this operation, and, consequently of the theorem, is grounded upon this consideration, viz. if eight men require 12 days to do the work, it is plain one man would require 8 times 12 days, = 96 days, to do the same work; but if one man can do it in 96 days, most certain 16 men can do it in one 16th part of that time. Therefore 96, divided by 16, will give the answer required, viz. 16(96 (6, as before, &c.

DOUBLE RULE of Three, or Compound Proportion.

All questions in this rule, where five numbers are proposed to find a sixth, may more easily and readily be answered by one general theorem, which compriseth both the direct and inverse rules.

But, first, you must carefully note, that in all questions of this nature, three of the five proposed terms are always conditional and supposed; and that the other two move the question, as for instance.

Example 1. If 100 l. will gain 6 l. in 12 months, what will 300 l. gain in 9 months? **Solution.** First say, if 100 l. gain 6 l. what will 300 l. gain? The answer will be 18 l. but this is gained in 12 months, therefore, in order to find how much is gained in 9 months, after the same rate, say, if 12 months give 18 l. what will 9 months give. The answer will be 13 l. 10 s.

Example 2. If 12 oxen eat up $3\frac{1}{2}$ acres of pasture in 4 weeks, and 21 oxen eat up 10 acres of like pasture in 9 weeks, how many oxen will eat up 24 acres in 18 weeks?

Solution. If 12 oxen eat up $3\frac{1}{2}$ acres in 4 weeks, then by proportion 30 oxen in 4 weeks, or 16 oxen in 9 weeks, or 8 oxen in 18 weeks, will eat up 10 acres, on supposition that the grass did not grow. But since by reason of the growth of the grass, 21 oxen in 9 weeks can only eat up 10 acres, that growth of the grass in 10 acres for the last 5 weeks will be as much as would be sufficient to feed the excess of 21 oxen above 16, that is 5 oxen for 5 weeks: or, which is the same thing, to feed 5 oxen for 18 weeks; and in 14 weeks (the excess of 18 above the first 4) the increase of the grass, by analogy, will be such as to be sufficient to feed 7 oxen for 18 weeks; for it is 5 weeks : 14 weeks :: $\frac{5}{2}$ oxen : 7 oxen. Wherefore add these seven oxen, which the growth of the grass alone would suf-

R U L

fice to feed, to the 8, which the grass without growth after 4 weeks would feed, and the sum will be 15 oxen; and lastly, if 10 acres suffice to feed 15 oxen for 18 weeks, then 24 acres will be found sufficient to feed 36 oxen for the same time.

RULE, in a monastic sense, a system of laws or regulations, whereby religious houses are governed, and which the religious make a vow at their entrance, to observe. Such are the rules of the Augustines, Benedictines, Carthusians, Franciscans, &c.

RULES of Court, in law, certain orders made, from time to time, in the courts of law, which attorneys are bound to observe, in order to avoid confusion; and both the plaintiff and defendant are at their peril also bound to pay obedience to rules made in court relating to the cause depending between them.

RULE, or RULER, an instrument of wood or metal, with several lines delineated on it, of great use in practical mensuration. When a ruler has the lines of chords, tangents, sines, &c. it is called a plane scale. See *Scale*.

Everard's Sliding RULE has already been described under the article *Gauging*.

Coggeshall's Sliding RULE is chiefly used for measuring the superficies and solidity of timber, &c. It consists of two rulers, each a foot long, one of which slides in a groove made along the middle of the other, as represented in plate XLVI. fig. 6.

On the sliding side of the rule are four lines of numbers, three whereof are double; that is, are lines to two radiiuses; and one, a single broken line of numbers: the three first, marked A, B, C, are figured 1, 2, 3, &c. to 9; then, 1, 2, 3, &c. to 10; their construction, use, &c. being the same as those of *Everard's sliding rule*. The single line, called the girt-line, and marked D, whose radius is equal to the two radiiuses of any of the other lines, is broke for the easier measurement of timber, and figured 4, 5, 6, 7, 8, 9, 10, 20, 30, &c. From 4 to 5 it is divided into ten parts, and each tenth subdivided into 2, and so on, from 5 to 6, &c.

On the backside of the rule are, 1. A line of inch-measure, from 1 to 12; each inch being divided and subdivided. 2. A line of foot measure, consisting of one foot, divided into 100 equal parts, and figured 10, 20, 30, &c. The back part of

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of the sliding piece is divided into inches, halves, &c. and figured from 12 to 24; so that, when drawn wholly out, there may be a measure of two feet.

RUE, *Ruta*, in the materia medica, a small shrubby plant, with thick bluish leaves divided into numerous roundish segments: on the tops of the branches come forth yellowish tetrapetalous, sometimes pentapetalous flowers, followed each by a capsule, which is divided into four partitions full of small blackish rough seeds. It is cultivated in gardens, flowers in June, and holds its leaves all the winter. The markets are frequently supplied with a narrow-leaved sort, which is cultivated in preference to the other, on account of its appearing variegated during the winter with white streaks. This herb has a strong unpleasant smell, and a penetrating pungent bitterish taste: much handled, it is apt to inflame and exulcerate the skin. It is recommended as a powerful stimulant, aperient, antiseptic, and as possessing some degree of an antispasmodic power; in cruditates and indigestion, for preserving against contagious diseases and the ill effects of corrupted air, in uterine obstructions and hysterical complaints, and externally in discentient and antiseptic fomentations. Among the common people, the leaves are sometimes taken with treacle on an empty stomach, as an anthelmintic. A conserve, made by beating the fresh leaves with thrice their weight of fine sugar, is the most commodious form for the exhibition of the herb in substance.

Goat RUE, *Galega*, a plant with a papilionaceous flower, and a long cylindric pod for its fruit.

RUM, a species of brandy, or vinous spirit distilled from sugar-canes. Rum, according to Dr. Shaw, differs from simple sugar-spirit, in that it contains more of the natural flavour, or essential oil of the sugar-cane; a great deal of raw juice and parts of the cane itself being often fermented in the liquor, or solution, of which the rum is prepared. The unctuous or oily flavour of rum is often supposed to proceed from the large quantity of fat used in boiling the sugar; which fat, indeed, if coarse, will usually give a stinking flavour to the spirit, in our distillations of the sugar-liquor, or wash from our refining sugar-houses; but this is nothing of kin to the flavour of the rum, which is really the effect of the natural flavour of the cane. The method of making rum is this: when a

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sufficient stock of the materials is got together, they add water to them and ferment them in the common method, though the fermentation is always carried on very slowly at first; because, at the beginning of the season for making rum in the islands, they want yeast, or some other ferment to make it work; but by degrees, after this, they procure a sufficient quantity of the ferment, which rises up as a head to the liquor in the operation, and thus they are able afterwards to ferment and make their rum with a great deal of expedition, and in large quantities. When the wash is fully fermented, or to a due degree of acidity, the distillation is carried on in the common way, and the spirit is made up proof; though sometimes it is reduced to a much greater strength, nearly approaching to that of alcohol or spirit of wine, and it is thus called double distilled rum. It might be easy to rectify the spirit, and bring it to much greater purity than we usually find it to be of; for it brings over in the distillation a very large quantity of the oil; and this is often so disagreeable, that the rum must be suffered to lie by a long time to allow before it can be used; whereas, if well rectified, it would grow mellow much sooner, and would have a much less potent flavour. The best state to keep rum in, both for exportation and other uses, is doubtless that of alcohol, or rectified spirit. In this manner it would be transported in one-half the bulk it usually is, and might be let down to the common-proof-strength with water when necessary: for the common use of making punch, it would likewise serve much better in the state of alcohol; as the taste would be clearer; and the strength might always be regulated to a much greater exactness than in the ordinary way. The only use to which it would not so well serve in this state, would be the common practice of adulteration among our distillers; for when they want to mix a large proportion of cheaper spirit with the rum, their business is to have it of the proof strength, and as full of the flavouring oil as they can, that it may drown the flavour of the spirits they mix with it, and extend its own. If the business of rectifying rum was more nicely managed, it seems a very practicable scheme to throw out so much of the oil as to have it in the fine light state of a clear spirit, but lightly impregnated with it; in this case it would very nearly resemble arrac, as is proved by the mix-

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ing a very small quantity of it with a tasteless spirit, in which case the whole bears a very near resemblance to arrack in flavour. Rum is usually very much adulterated in England; some are so barefaced as to do it with malt-spirit: the tastes of both are so nearly allied, that it is not easily discovered. The best method of judging of it is, by setting fire to a little of it: and when it has burnt away all the inflammable part, examining the phlegm both by the taste and smell.

RUMEN, in comparative anatomy, the paunch, or first stomach of such animals as chew the cud, thence called ruminant animals.

RUN, the after part of a ship's bottom both within and without, which grows narrower as it approaches the stern-post.

RUNDLET, or **RUNLET**, a small vessel containing an uncertain quantity of any liquor, from three to twenty gallons.

RUNNET, or **RENNET**, the acid juice found in the stomachs of calves that have fed on nothing but milk, and are killed before the digestion is perfect.

RUNNING of Goods, a clandestine landing of goods, without paying the legal customs or duties for the same.

RUPEE, **ROUPIA**, or **ROUPIAS**, names of gold and silver coin, current in the East Indies.

RUPTURE, in surgery, the same with hernia.

RURAL, or **RUSTIC**, in general denotes something that relates to the country.

* **RUSSIA**, or **MOSCOWY**, (the empire of) comprehends a considerable part of the continent of Europe and Asia, and is extended from 42 to 148 deg. of longitude, and between 45 and 72 deg. of north latitude, being bounded by the Frozen sea on the north, the Pacific ocean and China on the east, Chinese Tartary, the Mogul, Usbeck, and Circassian Tartars on the south; and by Poland, the Baltic sea, Swedish Finland and Lapland, and Norwegian Lapland on the west; being 4800 miles in length from the western coast of Livonia to cape Tziakotskago, the most eastern point of Siberia. It is in breadth 1800 from Derbent on the Caspian sea to the streights of Waygats, the most northern coast of Russian Lapland. It was formerly divided into three large provinces: the first was Red Russia, which now makes part of Poland; the second White Russia, which is compre-

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hended in the great duchy of Lithuania; and the third was Black Russia, commonly called Moscovy, from the name of Moscow, the chief town in this province; so that it appears that several territories in Europe, which formerly belonged to this crown, are now in the possession of other princes. But they have extended their conquests to the east, and now possess all the north part of Asia, as far as the Pacific ocean. This immense empire borders upon the Baltic sea, which is near Sweden; the White sea, on the frontiers of Lapland, the Frozen sea, which reaches to the north pole; the Black or Uxine sea, near the frontiers of Turkey; the Caspian sea, on the borders of Persia; and the Pacific or South sea, which bounds it on the east. The principal rivers are the Nieper, the Volga or Wolga, the Don or Tanais, the Daene or Duine, and the Oby.

* **RUSSIA**, or rather **MOSCOWY**, properly so called, is bounded on the south by Little Tartary; on the west by Poland and Sweden; on the north by the Frozen sea, and on the east by the northern part of Asia. It is part of the ancient Sarmatia, and is the largest country in Europe. The air is extremely cold, and they have ice and snow three parts of the year. But the heats of summer are sometimes very great. The plains are a mixture of marshes, lakes, and forests, and the little corn that they sow seldom comes to maturity. Towards Poland the country is more populous and fertile, and produces plenty of corn, and they reap two months after they have sown. Muscovy produces no wine, but plenty of flax, and there is a great quantity of deer, game, and honey, in the forests. The lakes supply them with fish, and there are bears, elks, reindeer, foxes, ermines, and martins. The merchants deal in furs, ox-hides, commonly called Russia leather, masts for ships, flax, hemp, linen cloth, talc, tallow, tar and pitch, wax, honey, rosin, soap, and salt fish.

* **RUSSIA (POLISH.)** The Russians formerly possessed all the country seated between the Niester, the Nieper, and the Vistula; but they were obliged to abandon that part which lies to the west of the river Niester, which has since been called the territory of Little Russia. This great province extends from the frontiers of Lithuania to the mouth of the river Nieper, which separates it from Muscovy on the eastern side, and the mountains of

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Comprach part it from Hungary on the western side. Little Russia is divided into two parts, Red Russia, and White Russia, which last comprehends the grand ducy of Lithuania. Red Russia comprehends Russia properly so called; Volhinia, which is a small province, seated on the frontiers of Lithuania; Podolia, seated near the river Nieper; and the Ukraïn, which is near the River Niefter.

RUST of a Metal, the flower or calx thereof procured by corroding and dissolving its superficial parts by some menstruum. Water is the great instrument or agent in producing rust; and hence oils, and other fatty bodies, secure metals from rust; water being no menstruum to oil, &c. and therefore not able to make its way through it.

All metals are liable to rust, even gold itself, if exposed to the fumes of sea-salt.

RUST of Corn, in husbandry, the name given by our farmers to a disease in corn and other vegetables, in which their stalks and leaves seem burnt up, and appear of a sort of rust colour. Wheat is blighted at two seasons, first in the blossom, and then its generation is prevented, many of the husks being empty in the ear, and the rudiments of the grains not impregnated: secondly, wheat is blighted when the grains are brought to maturity; and in this case they become light, and are of little value for making of bread, having scarce any flour in them. The first of these cannot happen in England from frosts, because our wheat is not in flower till the month of June; but it is long and continual rains that chill the blossoms, and in this manner prevent their fertility; this, however, does not often happen to us; these rains are not common at this season of the year; and, if they were, this country lying much of it open, the winds dislodge these drops of water from the ears, and prevent the mischief they would do there. Lammas wheat does not retain those drops so long as the bearded or cone wheat; and, in consequence of this, in the terrible blight in England, in the year 1725, the bearded wheat received infinitely greater mischief than the lammas wheat. The second kind of blight from light ears, is that which is more frequent, and more general with us; this brings the greater scarcity of wheat, and the cause of this is plainly want of nourishment of the grain, by whatever means that want is occasioned. Several accidents kill the plants, or

injure their health, and in that case the grains are not filled; lightning does great mischief to the farmer in this kind, as is plain by the several black spots and patches in fields of corn, in years when there has been more lightning than usual. This is a disaster that must be quietly suffered, since it can neither be prevented nor remedied; but the other causes of blights, which are more general, and do the most damage, may be prevented in some measure at least. One great and common cause of the blight is the lodging or falling of corn; in this case the stalks are broken near the ear, and the vessels are hurt which should carry up the nourishment to the ear. In this case, there can just juices enough pass for keeping the plant alive, and bringing it to its full height, but it is languid all the time, and the grains can never be filled with flour. The earlier in the season this lodging of the stalks happens, the thinner and poorer the ears will be: hence it happens, that when dung and tillage have brought a wheat land into so good a state, that in April and May it seems to promise the farmer five or six quarters of wheat, it shall all be destroyed by falling in June, and scarce yield him five bushels, and this is so thin and lank, that the expences of reaping and threshing are more than its value. The wind is generally accused of the throwing down these stalks; but this does not seem to be truly the case; the wind may press upon the plants; but the cause of their giving way to it is a weakness in their stalks, and this seems either owing to the want of nourishment, or the want of air, or of the sun's rays, and perhaps the want of all three together. A rich acre will maintain a crop of five quarters standing, while a poor acre will not be able to support such a crop, as would have yielded only about three quarters, had it stood. This is a proof of want of due nourishment being one great cause of the falling. Air is necessary to the nourishment of all plants; wheat in particular requires a very free air. It succeeds best in open-hilly places where the wind comes freely to it, and shakes off the drops of water from the leaves, as well as their own secretments; and it is plain, that a great quantity of the sun's rays is necessary to keep the wheat strong; because in the hotter countries it is not so subject to fall, as it is with us, and in other northern countries. There is another cause of the blight,

which is the wheat's coming too late into blossom. It should blossom in the beginning of June, because there is not otherwise time, during the hot weather, for it to pass through the different stages to the perfection of the grain. The causes of the blight being thus known, the cure or prevention may be attempted by the farmer on much more rational grounds, than it was among the ancients. It is advantageous to hasten as much as possible the time of blossoming of the corn, and to protract, as long as we can, the ripening of the grain, that it may have sufficient time to fill and swell. The earliest sown wheat is generally observed to escape the best, and this is owing to its coming soonest into blossom. The ancients used to let their sheep feed upon the corn while young in the blade, by way of preventing it from lodging or falling afterwards: some of our own farmers use this method also; and it is true, that the corn is prevented from falling by this; but the remedy is as bad as the disease, for the stalks are not made very strong by this practice, but the ears lighter. They therefore do not weigh down and lodge the stalks indeed, but they are in some sort blighted by this means, and the disease is caused by the means used to prevent it. This feeding down the wheat with sheep retards the time of its blossoming, and the only advantage of early sowing is thus taken away by it: what grows after the eating of the sheep is a sort of latter crop, and is always weaker and later than the first. The longer the corn remains on the ground, the more nourishment it requires from it; and, in this unnatural remaining on the land, there is no proper supply provided. The general remedy for all the cases of the blight is the modern method of horse-hoeing husbandry. In this the hoe stirs up the ground as often as the farmer pleases, and every such stirring gives new life and nourishment to the plant: this, as a supply of food for the ear, may be given, whenever it is necessary, and the wide intervals left for the hoe in the drilling the wheat; for this sort of husbandry gives a free passage for the sun and air to all the plants. The most general blight of all that happens in these cold countries is caused by insects, which some think are brought in the air by an east wind, accompanied by moisture, a little before the grain is filling with that milky juice which hardens into flour. These insects

deposit their eggs within the outer skin or rind of the stalks; and when the young ones are hatched, they feed on the parenchyma, and eat off many of the vessels which should convey this juice: then the ear is deprived of it, and must in consequence be thin and poor, in proportion to the number of the vessels eaten, and as the insects happen to come earlier or later; for sometimes they come so late, that the grains are sufficiently filled with this milky juice before they have any power to hurt the vessels. In this case, though the straw, when examined by the microscope, appears to have its vessels eaten and torn, and to be full of black specks, which are caused by the same insects, yet the grain is plump and full. This is one of the many cases in which the early sown wheat escapes the blight. It has been seen, that, of the crop of wheat in the same field, some of which has been sown earlier and some later, though there has been no difference in the whole, yet the early sown wheat has been full-eared, and the late sown has been light-eared; and both have had their stalks equally eaten and spotted by the insects. A proof that these mischievous insects are brought by the east-wind is, that the corn on the east side of hedges is often found blighted, and destroyed by them, while that on the west side of the same hedge is unhurt. Some suppose they are bred in the earth, and crawl up the stalks, because some whole fields are subject to them, and others escape them wholly; but this is more probably owing to the difference of the situation of these fields, as they are more or less exposed to the east. Some wheat is more liable to be hurt by this insect blight than another, and the best remedy in this evil is to plant fields, which are most exposed to these blights, with such wheat as is least subject to be injured by them. The white cone, or bearded wheat, which has its stalk or straw like a rush, not hollow, but full of pith except near the lower part, where it is very thick and strong, is very proper on this occasion; it is probable that this plant has sap vessels, that lie deeper, and so are not to be destroyed like those of common wheat: the stalks of this are often found spotted with black, which shews that the insects have been there, and yet the ears are found full, and the grains plump in them. There is another kind of blight, called by the farmers moor loor; this is occa-

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sioned by the earth's falling away from the roots of the wheat, and is cured by throwing up small furrows against the rows in the drilling method. The horse-hoeing husbandry is best of all others calculated to prevent blights, and to cure them when they happen; but, as there are some years when all wheat is blighted, even at these times, the horse-hoeing husbandry has an advantage; for, when the stalks fall, they never lie absolutely on the ground in this case, but the air has room to play between them; but the common sown wheat has not this advantage. The ears in the blighted wheat of the drilled kind are not so light nor poor as in others, but make the farmer some amends in the corn, though greatly less than in the common produce. *Tull's Horsehoeing Husbandry.*

Corn is always more subject to blights after a wet summer than at any other season; the reason seems, that, the roots being continually drenched with water, the plant runs up to stalk, and has very little ear, and the corn is never large or full.

It is observed, that when the mildews rise, or blights fall, they generally infect only one kind of grain, sometimes wheat, sometimes oats, and sometimes barley only; and the same sort of observation holds good in regard to fruit; sometimes only apples are blighted, sometimes only pears, sometimes cherries, and so on. *Martimer's Husbandry.*

RUSTIC, in architecture, implies a manner of building in imitation of nature, rather than according to the rules of art.

RUSTIC WORK, is where the stones in the face, &c. of a building, instead of being smooth, are hatched, or picked with the point of a hammer.

RUSTIC ORDER, that decorated with rustic quoins, rustic work, &c.

RUSTRE, in heraldry, a bearing of a diamond shape, pierced through in the middle with a round hole.

RUT, in hunting, the venery, or copulation of deer.

* **RUTLANDSHIRE**, the least county in England, being but forty miles in circumference; in which are two towns, 48 parishes, and 3263 houses. However, for quality it may be compared with any other county; the air being good, the soil fertile, both for tillage and pastures; and it not only affords plenty of corn, but feeds great numbers of horned cattle and sheep. It is well wa-

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tered with brooks and rivulets, and the principal rivers are the Weland and the Wash. It is bounded on the east by Lincolnshire; on the south by the river Weland, which parts it from Northamptonshire; and on the west and north by Leicestershire. It has only two market towns, namely Okeham, where the assizes and sessions are held, and Uppingham.

RYE, *Secale*, in botany, a genus of plants, the corolla of which consists of two valves; the exterior valve is rigid, ventricose, acuminate and compressed, its lower edge is ciliated, and it terminates in a long arista: the interior valve is lanceolated and plane; the corolla serves the office of a pericarpium, inclosing the seed, and, at a proper time, opening and dropping it out; the seed is single, oblong, and almost cylindric. This sort of grain succeeds very well on any sort of dry land, even on the most barren gravel or sand. The farmer's sow it about the beginning of September, after a summer's fallow, in the driest time they can. Two bushels of seed is the quantity generally allowed to an acre of land: but if it be ground newly broken up, or if it be subject to worms, they then allow a peck more to the acre. A little sprinkling of dung, or mud, upon rye land, will greatly advance the crop, though it is laid but half the thickness that it is for other corn; its produce is commonly about twenty bushels upon an acre. The farmer knows it is ripe when the straw is yellow, the ear bends, and the grain feels hard. It is not apt to shed the seeds; and therefore, if there are many weeds among the crop, it may be left lying upon the ground, or gravel, as they call it, eight or nine days after it is cut, before it is bound up, if the weeds are not dry sooner: for otherwise, they will grow moist in the barn, and cause the whole to give, and not to thrash well, and sometimes they will make it mutty. As it is a grain that will grow in the ear sooner than any other if it be wet, care must be taken, if rain falls after it is cut, to turn it as it lies upon the ground every other day, and at the same time to keep the ears as far from the earth, and as much above the stubble, as may be; this will prevent the mischief. If it be pretty clear of weeds, it may be housed as soon as it is cut. If either this grain or wheat lodge upon the ground, it is best to cut them, even though they are not ripe; for the stalk being

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being broken will yield no more nourishment to the ear. There is another very essential use to the farmer made of rye. April is the season of the year when food is of all others the scarcest for cattle, especially for sheep and lambs: on this occasion some split the ridges of the wheat stubble, and sow them with rye; they harrow this in, allowing about a bushel to an acre; they feed the sheep with this in April, and in May they plow it up for fallow. *Martimer's Husbandry.*

In many parts of France there have been certain years, in which this grain, from no apparent cause, has proved noxious, and sometimes even poisonous. Mr. Perrault, travelling through Fologne, was informed that the rye of that province was sometimes so corrupted, that those who eat of the bread that had much of the corrupted grain in it, were seized with gangrenes in different parts of the body, which was not preceded by any fever, inflammation, or any considerable pain; and that the gangrened parts usually fell off after a time of themselves, without the assistance of surgical instruments. The grains of rye thus degenerated are black on the outside, and tolerably white within; and, when they are dry, they are harder and closer than the natural good grain; they have no ill taste, but sometimes they have a viscous metallic like honey hanging to one end of them. They grow longer than the other grains in the same ear, and are found, from one or two, to seven or eight in the same ear. Some have supposed that these were not the proper seeds of the plant, but some other extraneous bodies that got in among them; but it is evident, from a close inspection, that they are really the genuine seeds only altered by some accident; the coats, and the furrow, and even the germen for the young plant, being entirely the same as in the natural seeds. The place where the rye is found to degenerate in this manner, are all a dry and sandy soil. In these places there is scarce any soil in which more or less of these large seeds are not found among the others, but, when there are but few of them, the ill effects are not perceived. The season when the degeneracy is greatest, and the effects the worst of all, is, when there have been excessive rains in the spring, and there come on excessive heats in the succeeding summer. The bread which is

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made of the rye that holds over so much of this bad corn, is not distinguishable from other rye bread by the taste, and seldom produces its ill effect, till some considerable time after it is taken. Besides the gangrenes already mentioned it not unfrequently brings on other bad consequences, such as drying up the milk of women who give suck, and occasioning sometimes malignant fevers, accompanied with drowiness, ravings, and other dangerous symptoms. The part usually seized by the gangrene is the legs, and this often in a very frightful manner. The arms are the parts most subject next, but all the other parts of the body are subject to it. The first symptom of this approaching gangrene is a stupefaction and deadness in the part; after this there comes on some pain, though not violent, and the skin becomes livid; sometimes the skin shews no mark of it, but the pain and swelling increase; and it is necessary to make an incision into the flesh to find the gangrened part. In the more desperate cases, the only remedy is the taking off the part; and, if this is neglected, the flesh is all wasted, and the skin becomes black, and clings round the bones, and the gangrene appears again in the shoulders. The poorer people are only subject to this disease; and, as they principally eat the rye bread, and as those years when there is most of this bad grain among the ears of rye produce most of these disorders, it has been judged certain that the rye is the occasion of it. It may deserve enquiry, however, whether that grain may not be innocent of the mischief, and its degeneracy and the distemperature attributed to it may not both be the effect of the same bad constitution of the air. If it proves, on enquiry, that only those who eat of the rye are subject to the disease, it will seem a proof of its really being owing to it; and in this case the mischief may be prevented by the sifting the grain before it is ground, the degenerated grains being so long that they will all remain in the sieve that lets the other through. The experiment has been made on the spot, by giving the flour of the corrupted grains alone to animals; but it is said they have been killed by it. *Phil. Trans. N^o. 130.*

* RYE-HOUSE PLOT. It was prevented by a fire which happened at Newmarket, March the 22d. 1693, and was discovered June 11, 1693.

S A B

S, A consonant, and the eighteenth letter of the alphabet. This letter was used in the same form by the ancient Greeks, in an inverted position. Its sound is formed by driving the breath through a narrow passage between the palate and the tongue elevated near it, together with a motion of the lower jaw towards the upper, the lips being a little way open, with such a special configuration of every part of the mouth and larynx as renders the voice something fibulous or hissing. The old or new orthography of the French differ chiefly in the use of the *s*; the latter omitting it in writing where it is not heard in pronunciation, and the former retaining it. Thus the followers of the one, particularly the Academy in their dictionary, *tempête*, *huître*, *juste*, *noître*, those of the other, *tempête*, *huître*, *fûte*, *noître*.

s, among the ancients, was a numerical letter, signifying seven.

s. a. in medical prescriptions, is an abbreviation of *secundum artem*, according to the rules of art; chiefly used where some uncommon care and dexterity is required.

SABEANS, in church-history, a set of idolaters, much more ancient than the Jewish law.

SABBATH, or the day of rest, a solemn festival of the Jews, on the seventh day of the week, or Saturday, beginning from sun-set on Friday to sun-set on Saturday. The observance of the sabbath began with the world; for God having employed six days in its creation, appointed the seventh, as a day of rest to be observed by man, in commemoration of that great event. On this day the Jews were commanded to abstain from all labour, and to give rest to their cattle. They were not allowed to go out of the city farther than two thousand cubits, or about a mile; a custom which was found on the distance of the ark from the tents of the Israelites, in the wilderness, after their leaving Egypt; for being permitted to go, even on the sabbath-day, to the tabernacle to pray, they from thence inferred, that the taking a journey of no

S A B

greater length, though on a different account, could not be a breach of the sabbatical rest. As the seventh day was a day of rest to the people, so was the seventh year to the land; it being unlawful in this year to plow or sow, and whatever the earth produced, belonged to the poor; this was called the sabbatical year. The Jews, therefore, were obliged, during the six years, and more especially the last, to lay up a sufficient store for the sabbatical year. The moderns, as well as the ancient Jews, are very superstitious in the observance of the sabbath; they carry neither arms, nor gold, nor silver about them; and are permitted neither to touch these, nor a candle, nor any thing belonging to the fire; on which account they light up lamps on Friday, which burn till the end of the sabbath.

There is at present a sect of Baptists called Sabbatarians, from their observing the seventh day of the week, as a day set apart for the worship of God; they attempt to justify this practice by alledging that the Jewish sabbath was never abrogated in the New Testament; and that where God has given a command, it is our duty to observe it till he has abrogated or altered it by a new command. See *Sunday*.

SABELLIANS, a sect of Christians of the third century, that embraced the opinions of Sabellius, a philosopher of Egypt, who openly taught that there is but one person in the godhead.

SABLE, or **SABLE ANIMAL**, in zoology, a creature of the weasel kind, called by authors *mustela zibellina*.

SABLE, in heraldry, denotes the colour black, in coats of arms belonging to gentlemen; but in those of noblemen it is called a diamond; and in those of foreign princes, saphire. It is expressed in engraving by perpendicular and horizontal hatches crossing one another.

SABRE, a kind of sword or scymetar, with a very broad and heavy blade, thick at the back, and a little falcated or crooked towards the point; it is the common weapon worn by the Turks, who are said to be very expert in the use of it.

SAC-

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SACCHARUM SATURNI, SUGAR of LEAD, is thus ordered to be made in the London Dispensatory: boil cerus with distilled vinegar, until the vinegar becomes sufficiently sweet; then filter the vinegar through paper, and after due evaporation set it to chrySTALLIZE.

Some have ventured to give sugar of lead internally, in doses of a few grains, as a styptic, in hæmorrhages, profuse colliquative sweats, seminal fluxes, the fluor albus, &c. and indeed it must be allowed, that it very powerfully restrains the discharge; but then it occasions other symptoms, often dangerous, and sometimes fatal; as violent cholic pains, obstinate constipations, cramps, tremors, &c. so that its internal use seems by no means innocent.

SACERDOTAL, something belonging to priests.

SACK of Wool, a quantity of wool containing just twenty-two stone, and every stone fourteen pounds. In Scotland, a sack is twenty-four stone, each stone containing sixteen pounds.

SACK of Cotton Wool, a quantity from one hundred and a half to four hundred weight.

SACKS of Earth, in fortification, canvas-bags filled with earth. They are used in making retrenchments in haste, to place on parapets, or the head of the breaches, &c. or to repair them when beaten down.

SACKBUT, a musical wind-instrument, being a sort of trumpet, though different from the common trumpet both in form and size: it is fit to play a bass, and is contrived to be drawn out or shortened, according to the tone required, whether grave or acute. It takes asunder in four pieces, and has frequently a wreath in the middle, which is the same tube only twice twisted, or making two circles in the middle of the instrument, by which means it is brought down one fourth lower than its natural tone: it has also two pieces or branches on the inside, which do not appear, unless drawn out by an iron-bar, and which lengthens it till it hit the tone required. The sackbut is usually eight feet long, without reckoning the circles, and without being drawn out: when it is extended to its full length it is usually fifteen feet; the wreath is two feet nine inches in circumference.

SACRAMENT, *Sacramentum*, signifies in general, a sign of a thing sacred and holy; and is defined to be an outward

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and visible sign of a spiritual grace. Thus there are two objects in a sacrament, the one the object of the senses, and the other the object of faith: Protestants admit only of two sacraments, baptism, and the eucharist, or Lord's supper: but the Roman catholics own seven, viz. baptism, confirmation, the eucharist, penance, extreme unction, ordination, and marriage.

SACRED, something holy, or that is solemnly offered and consecrated to God, with benedictions, unctions, &c.

SACRIFICE, a solemn act of religious worship, which consisted in dedicating or offering up something animate or inanimate on an altar, by the hands of the priest, either as an expression of their gratitude to the Deity for some signal mercy, or to acknowledge their dependence on him, or to conciliate his favour. The origin of sacrifices is by some ascribed to the Phœnicians, but Porphyry ascribes it to the Egyptians, who first offered the first fruits of their grounds to the gods, burning them upon an altar of turf: thus in the most ancient sacrifices there were neither living creatures, nor any thing costly or magnificent; and no myrrh or frankincense. At length they began to burn perfumes; and afterwards men leaving their ancient diet of herbs and roots, and beginning to use living creatures for food, they began also to change their sacrifices. The scriptures, however, furnish us with a different account; for Noah, as it is said, sacrificed animals at his coming out of the ark; and even Abel himself sacrificed the best and fattest of his flock; but Grotius thinks it more probable that he contented himself with making a mere oblation of his flocks, &c. without slaying them. The Jews had two sorts of sacrifices, taking the word in its largest signification: the first were offerings of tythes, first-fruits, cakes, wine, oil, honey, and the like; and the last offerings of slaughtered animals. When an Israelite offered a loaf or a cake, the priest broke it in two parts, and sitting aside that half which he reserved for himself, broke the other into crumbs, poured oil, wine, incense, and salt upon it, and spread the whole upon the fire of the altar. If these offerings were accompanied with the sacrifice of an animal, they were thrown upon the victim to be consumed along with it. If the offerings were of the ears of new corn, they were parched at the fire, rubbed in the hand, and then offered

ferred to the priest in a vessel, over which he poured oil, incense, wine, and salt, and then burnt it upon the altar, having first taken as much of it, as of right belonged to himself. The principal sacrificers among the Hebrews consisted of bullocks, sheep, and goats; but doves and turtles were accepted from those who were not able to bring the other; these beasts were to be perfect and without blemish. The rites of sacrificing were various, all of which are very minutely described in the books of Moses.

The manner of sacrificing among the Greeks and Romans was as follows: In the choice of the victim, they took care that it was without blemish or imperfection; its tail was not to be too small at the end; the tongue not black, nor the ears cleft; and that the bull was one that had never been yoked. The victim being pitched upon, they gilt his forehead and horns, especially if a bull, heifer, or cow. The head they also adorned with a garland of flowers, a woollen insula or holy fillet, whence hung two rows of chaplets with twisted ribbands; and on the middle of the body a kind of stole, pretty large, hung down on each side; the lesser victims were only adorned with garlands and bundles of flowers, together with white tufts or wreaths. The victims thus prepared, were brought before the altar; the lesser being driven to the place, and the greater led by an halter; when if they made any struggle or refused to go, the resistance was taken for an ill omen, and the sacrifice frequently was set aside. The victim thus brought was carefully examined, to see that there was no defect in it: then the priest, clad in his sacerdotal habit, and accompanied with the sacrificers and other attendants, and being washed and purified according to the ceremonies prescribed, turned to the right hand and went round the altar, sprinkling it with meal and holy water, and also besprinkling those who were present. Then the crier proclaimed with a loud voice, Who is here? To which the people replied, Many and good. The priest then having exhorted the people to join with him by saying, Let us pray, confessed his own unworthiness, acknowledging that he had been guilty of divers sins; for which he begged pardon of the gods, hoping that they would be pleased to grant his requests, accept the oblations offered them, and send them all health and happiness; and to this general form added petitions

for such particular favours as were then desired. Prayers being ended, the priest took a cup of wine, and having tasted it himself, caused his assistants to do the like; and then poured forth the remainder between the horns of the victim. Then the priest, or the crier, or sometimes the most honourable person in the company, killed the beast, by knocking it down, or cutting its throat. If the sacrifice was in honour of the celestial gods, the throat was turned up towards heaven: but if they sacrificed to the heroes or infernal gods, the victim was killed with its throat towards the ground. If by accident the beast escaped the stroke, leaped up after it, or expired with pain and difficulty, it was thought to be unacceptable to the gods. The beast being killed, the priest inspected its entrails, and made predictions from them. They then poured wine, together with frankincense, into the fire, to increase the flame, and then laid the sacrifice on the altar; which in the primitive times was burnt whole to the gods, and thence called an holocaust: but, in after-times, only part of the victim was consumed in the fire, and the remainder reserved for the sacrificers; the thighs and sometimes the entrails being burnt to their honour, the company feasted upon the rest. While the sacrifice was burning, the priest, and the person who gave the sacrifice, jointly prayed, laying their hands upon the altar. Sometimes they played upon musical instruments in the time of the sacrifice, and on some occasions they danced round the altar, singing sacred hymns in honour of the gods.

SACRILEGE, the crime of profaning sacred things, or those devoted to the service of God.

SACRISTY, in church-history, an apartment in a church, where the sacred utensils were kept: being the same with our vestry.

SACRO-LUMBARIS, in anatomy, one of the extensor muscles of the back and loins, has its origin at the os sacrum and the posterior spine of the ilium, and its termination in the upper part of the ribs.

SACRUM Os, the sacred bone, in anatomy, the lower extremity of the spina dorsi, being a bone of a triangular figure, with a rough surface; its substance is spongy, and it has two lateral apophyses for its articulation with the ossa innominata, also two smaller upper apophyses, with glenoid cavities for the

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articulation into the lower vertebra; and an inferior apophysis, for its articulation with the os coccygis: it has also a canal, for the end of the spinal marrow.

In adults, the os sacrum is one continued bone; but, in infants, it is almost entirely cartilaginous; and in children more grown up, it always consists of several pieces, the junctures of four or five of which may be seen even in adults.

SADDLE, a seat upon a horse's back, contrived for the conveniency of the rider.

SADDLES, amongst seamen, a sort of wooden clutches nailed on the upper side of the main and fore-yard-arms, whereon to fix the studding sail-booms, which slide out upon them when the studding sails are to be set.

SADDUCEES, in Jewish antiquity, a famous sect among the ancient Jews, so called from their founder Sadoc Antigonus of Socho, president of the Sanhedrim at Jerusalem, and teacher of the law in the principal divinity-school of that city. Having often in his lectures, asserted to his scholars, that they ought not to serve God in a servile manner, with respect to reward, but only out of filial love and fear; two of his scholars, Sadoc and Balthus, inferred from thence, that there were no rewards or punishments after this life; and, therefore, separating from the school of their master, they taught that there was no resurrection, nor future state. Many embracing this opinion, gave rise to the sect of the Sadducees, who were a kind of Epicureans, but differing from them in this, that though they denied a future state, yet they allowed the world was created by the power of God, and governed by his providence; whereas the followers of Epicurus denied both. The Sadducees denied all manner of predestination whatever, and not only rejected all unwritten traditions, but also all the books of the Old Testament, excepting the Pentateuch.

SAFERON, *Crocus*, in botany, &c. See *Crocus*.

SAGATHEE, in commerce, a slight kind of woollen stuff, serge, or ratteen, sometimes mixed with a little silk.

SAGE, *Salvia*, in botany, a low shrubby plant, with square stalks, obtuse wrinkled dry leaves set in pairs, and large bluish labiated flowers, in loose spikes on the tops of the branches: the upper lip of the flower is nipt at the extremity, the lower divided into three segments. It is a native of the southern parts of Europe,

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common in our gardens, and flowers in June. There are two species of sage, namely, the common sage, and the small sage, or sage of virtue. Common sage with the leaves nearly oval, but acuminate, is sometimes green and sometimes red: both the green and red sorts rise from the seeds of one and the same plant. Small sage, or sage of virtue, with narrow leaves, is generally whitish, never red, and most of them have at the bottom a piece standing out at each side in the form of ears. The leaves and tops of sage are moderately aromatic and corroborant, and used in debilities and relaxations both of the nervous and vascular system. Their smell is pretty strong and not disagreeable; their taste somewhat warm, bitterish, and subastrigent: with solution of chalybeate vitriol, they strike a deep black colour. The second sort is both in smell and taste the strongest, the first most agreeable. Of both kinds, the flowers are weaker and more grateful than the leaves; and the cup of the flower stronger, and obviously more resinous, than any other part. The leaves of sage give out their virtue both to water and rectified spirit, most perfectly to the latter: to the former they impart a brownish, to the latter a dark green tincture. The watery infusion is often used as tea, and often acidulated with a little lemon juice for a diluent in febrile distempers: the spirituous tincture is in taste stronger than the watery, but the smell of the sage is by this menstruum covered or suppressed.

SAGITTA, in astronomy, the arrow or dart, a constellation of the northern hemisphere, near the eagle; consisting of five stars, according to Ptolemy and Tycho; but in Mr. Flamsteed's catalogue, of no less than twenty-three.

SAGITTA, in botany, implies the top of any small twig, cyon, or graft of a tree.

SAGITTA, in trigonometry, the same with the versed sine of an arch.

SAGITTAL Suture, in anatomy, the second of the genuine sutures of the cranium or skull.

SAGITTARIUS, the *ARCHER*, in astronomy, the ninth sign of the zodiac. See *Zodiac*.

The stars in this constellation in Ptolemy's catalogue are thirty-two, in Tycho's sixteen, and in Mr. Flamsteed's fifty-two.

SAGO, a simple brought from the East-Indies, of considerable use in diet as

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a restorative. Sago is a sort of bread produced in the following manner, from a tree called landan, growing in the Moluccas. When a tree is felled, they cleave it in two in the middle, and dig out the pith, which is eatable, when it comes fresh out of the tree. They pound it in a mortar, till it is reduced into a kind of powder somewhat like meal. Then they put it in a sarge made of the bark of the same tree, placing it over a cistern made of its leaves, and pour water on it, which separates the pure part of the powder from the woody fibres wherewith the pith abounds. The flour thus filtrated they call sagu, which they make into paste, and bake it in earthen furnaces.

SAILS, in navigation, large cloths of canvas, formed by a combination of small ones, whose edges are sewed together by double seams, and whose skirts are surrounded by a rope called the bolt-rope. They are extended on or between the masts, to catch the wind, whereby the ship is impelled along the surface of the water. There is a great variety of sails in every ship, as suited to the force or direction of the wind. The principal ones are the courses and top-sails, which are spread by the lower and the top-sails yards. The sails on the main-mast are the main-sail, which is the lowest and largest; next the top-sail, and above it the top-gallant-sail. On the fore-mast, in the same position, the fore-sail, the fore-top-sail, and fore-top-gallant-sail; and on the mizen-mast, the mizen, the mizen-top-sail, and mizen-top-gallant-sail. Above the main and fore-top-sails, there is frequently a small light sail, hoisted in fair weather and light winds, called the royal; and without the skirts of the main-sail, fore-sail, main and fore-top-sails, there are also thin sails, extended in fair winds, called the studding-sails. The sails spread between the masts are most usually triangular; these are termed stay-sails, being hoisted upon the stays, which descend obliquely from the mast-heads. The sails upon the bow-sprit are the jib, fore-stay-sail, sprit-sail, and sprit-sail-top-sail. Besides these there are many others which are set occasionally, as the driver, ring-tail, water-sail, cross-jack, &c. &c. The stay-sails, between the mizen and main-masts, are denominated the mizen-stay-sail, mizen-top-mast-stay-sail, and mizen-top-gallant-stay-sail. The stay-sails before the fore-mast are already described, as being on the bow-sprit, to be the jib and fore-stay-

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sail; there is also sometimes a fore-top-mast-stay-sail, or inner jib. There are several different methods of sailing, as quartering, large, afore the wind, and close hauled.

The motion of sailing communicated to the ship is thus elegantly described by the ingenious M. Bouguer.

When a ship sails out of a harbour, she acquires her motion by infinitely slow degrees, much after the same manner as heavy bodies, in their fall, arrive not at a certain velocity, but by an infinite repetition of the action of their weight. The first impulsions of the wind greatly affect the velocity, because the resistance of the water might destroy them; for the velocity being at first small, the resistance of the water, which depends thereon, will be very weak; but the faster the ship goes, the less will be the force of the wind on the sails; whereas it is quite otherwise with respect to the impulsion of the water on the bow, because it augments in proportion to the velocity with which the ships sails. So the new degrees which the effort of the sails adds to the motion of the ship, are continually decreasing; whilst, on the contrary, those which diminish the resistance of the bow are continually increasing. The velocity is accelerated in proportion as the quantity added is greater than that subtracted; but, when these two powers become equal, when the impulsion of the wind on the sails has lost so much of its force as not to act, but in proportion to the force with which the resistance of the water acts on the bow, in the opposite sense, the ship will then go no faster, and will sail with a constant uniform motion. The great weight of the ship may be the cause of the ship's being so long in coming to her greatest velocity; but this weight makes nothing to the degree of velocity; and when the ship has once come to it, she afterwards goes on by her own intrinsic motion, and she can neither gain nor lose any new degree of velocity. She moves as by her own proper force in vacuo, without being afterwards subject either to the effort of the wind on the sails, or the resistance of water on the bow. If at any time the impulsion of the water on the bow should destroy any part of the velocity, the impulsion of the wind on the sail will repair it, so the motion will continue the same; but it must be observed, this will only be when these two powers act in a direction quite contrary to one another:

otherwise they will not mutually destroy one another. The whole theory of working ships depends upon this opposition and perfect equality which should subsist between the impulsion of the water and the impulsion of the wind. *Traité du Navire.*

SAINT, in the Romish church, a holy person deceased, and since his decease canonized by the pope, after several informations and ceremonies.

SAINTFOIN, in botany, &c. an artificial pasture much used for the feeding of cattle.

The roots of saintfoin are long, woody, black without and white within. They are perennial and terminate at the surface of the ground in a head, whence rise the leaves and several stalks, two feet or two and a half long, of a reddish colour, and bending on all sides. The leaves of saintfoin are conjugated, and consist of several small leaves or folioles, green above, and white and velvety beneath: they terminate in a point, and are fastened by pairs to a common foot stalk, which terminates in a single small leaf or foliole. The branches are terminated by spikes of leguminous red flowers, and sometimes white. When the bloom is past, the pistil becomes a small crested pod, rough, and containing a seed like a kidney. There is another sort of saintfoin that is smaller, and the seeds rougher: the large sort is best. There is also another large sort that comes from Spain, which has very red flowers: this yields a great deal of grass; but hard frosts kill it. Saintfoin is a very vigorous plant, and yields a great deal of excellent fodder; not so much however as lucerne, because it can only be mowed twice a year; but it has the advantage of lucerne, in not being so nice with respect to the soil: it thrives infinitely better in well-manured land, that has a good depth of soil; but it does not do amiss in russet lands, in which lucerne would soon perish: besides, every kind of grain grows well on land that has been in saintfoin. Land intended for saintfoin has two or three ploughings, that it may be well broke: the stones must be picked off the land, that it may be mowed close. About two thirds of the usual quantity of oats should be sowed with the saintfoin; and for an arpent of an hundred perches, each twenty-two feet, eight bushels Paris measure of seed should be used. The saintfoin mixed with the oats should be sowed in March, and covered with the harrow,

as it would not grow if buried too deep. As saintfoin seed is often bad, a little of it should be kept out of the field; and the second year the first crop is cut, which however is not so good as that of the third. Saintfoin is cut sooner or later according to the use it is to be put to. If it is for sheep, it should be mowed as soon as it is in bloom; if to feed oxen or cows, when the bloom is over; and if for horses, it should be suffered to stand till the seed is partly formed in it, in which state the horses are very fond of it: finally, if it is intended to save the seed, either for sowing, or to give to horses, which like it better than oats, or to feed poultry, the saintfoin should not be cut till the greatest part of the seed is ripe. When the seed of saintfoin is to be saved, it should be mowed early in the morning, before the dew is off, or there will be a loss. Saintfoin of three or four years old is generally cut when the bloom is going off. In the southern provinces they keep the cattle out of it, when they would have a second or third crop: but in the other parts of the kingdom, instead of taking a second crop, they turn their horned cattle into it, and the rather, because after the first crop of saintfoin, seed becomes scarce elsewhere. Saintfoin has another advantage over lucerne, it being much easier mowed, because the sap, being less viscous, evaporates sooner; and it is of a greener colour when in a dark season it is dried by the wind. If rain falls after saintfoin is cut, the swarths must not be turned till the weather is fine: by this means it will still be green and good. There is another advantage in saintfoin, which is, that though the weather should prove rainy, it may be mowed either before the bloom, whilst it is in bloom, when the bloom is past, or when the seed is ripe, as it is most likely that at some of those periods the weather will prove fine. It may be imagined, that saintfoin which has perfected its seeds will yield but indifferent fodder; the leaves and flowers being fallen, nothing remains but large stalks, which however horses will eat, the taste being agreeable to them. Saintfoin, when in good order, yields a fodder excellent for all kinds of cattle, as has been already noticed, whether it is given green or dry: care however must be taken that they do not eat too much of it, particularly such as do not much work: for instance, most coach-horses. Though this plant will grow in all sorts of land,

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cept such as is marthy, yet it thrives much best in a good soil: it would therefore be of use to dung it now and then. The vigour of the plants may be increased by allowing the roots a space of soil to extend in, and giving it frequent tillage: for this reason, when we would preserve it for more than nine years, it should be cultivated in rows, in the manner of lucerne; with this difference, however, that there may be two rows of saintfoin; and two stirrings to the intervals will be enough. But as saintfoin will thrive in any soil, and prepares land well for wheat or rye, it is seldom preserved long in the same field; therefore the common method of husbandry is in general best for it. It is proper to observe that two bushels of saintfoin seed will do horses as much good as three of oats. Saintfoin seed will keep very well when it is put into the barn unthrashed; but when it is thrashed, it must be spread thin in the granary, and often turned, or it will be in danger of heating. The use of this fodder is not so dangerous to horses as lucerne, or even clover. *Du Hamel's Husbandry.*

* SAINT-JOHN, HENRY, lord viscount Bolingbroke, a great politician and philosopher, was descended from an ancient family, and born in 1672. Having passed through Eton school, he was removed to Christ-church, Oxford; and when he left that university, was considered as possessed of very uncommon qualifications. He had an agreeable person; his looks had a dignity mixed with sweetness, and he had a manner that was extremely agreeable. He had great acuteness, and to extraordinary a memory, that whatever he read he retained so as to make it entirely his own. He was much addicted to women, and apt to indulge himself in late hours, and in all the excesses that usually attend them; but he himself observes, that reflection had often its turn, and that the love of study, and the desire of knowledge never quite abandoned him. He was at length elected for the borough of Wotton-Basnett, and sat in the fifth parliament of king William, which met in February 1700, and several of the succeeding parliaments. In 1702, queen Anne making a tour from Windsor to Bath, by the way of Oxford, Mr St. John had the degree of doctor of laws conferred on him. As he steadily persevered in the Tory connections, which he had embraced contrary to the inclinations of his father and grandfather, who were

both Whigs, he gained such influence, that on the 10th of April 1734, he was appointed secretary of war, and of the marines: and as this post created a constant correspondence with the duke of Marlborough, he entertained the highest opinion of that great general, which he retained till the last moment of his life. Yet he was so closely connected in all political measures with Mr. Harley, that when that minister was removed from the seals in 1707, he chose to follow his fortune, and the next day resigned his post. At length, in 1710, Mr. Harley being made chancellor, and under-treasurer of the exchequer, the post of secretary of state was given to Mr. St. John. Upon the calling of a new parliament, on the 25th of November, he was chosen knight of the shire for the county of Berks. He now appeared in a scene of action that called forth all his abilities. He alone sustained almost the whole weight of the peace of Utrecht, which he was not, however, supposed to negotiate for the advantage of his country; and therefore was justly censured, and fell under the indignation of the people: yet in July 1712 he was created baron St. John of Lediard-Tregoeze in Wiltshire, and viscount Bolingbroke, but he expected to have been created earl of Bolingbroke; and his not obtaining that title filled him with resentment against Harley, who had not only disappointed him, but got an earldom for himself: and his resentment was afterwards increased, by her majesty's overlooking him in giving the vacant ribbons of the order of the garter, and among other noblemen, bestowing one on Harley, then earl of Oxford. It is, therefore, no wonder that when the treasurer's staff was taken from his old friend, he should express his joy by a grand entertainment. The earl of Oxford said upon his going out, that some of them should smart for it; and Bolingbroke was not insensible of his danger, yet was not without hopes of securing himself by making his court to the whigs. But soon after the accession of king George I. the seals were taken from him, and all his papers secured. He however strove to keep up the spirits of the friends to the late administration, without omitting any proper occasion of shewing his respect to his majesty: but soon after the meeting of the new parliament his heart began to fail him, and in March 1715 he went off to Dover in disguise, as a servant to La Vigne, one of the

the French king's messengers. Upon his arrival at Paris, he received an invitation from the Pretender to engage in his service, which he absolutely refused, and applied himself to prevent the extremity of his persecution in England. Soon after he retired into Dauphine, where receiving a message from some of his party here, he complied with a second invitation from the Pretender, and taking the seals of the Secretary's office at Commercy, he set out with them for Paris, in order to procure from that court the necessary succours for his new master's invasion of England. Mean while the vote for impeaching him had passed in the house of commons, and being carried up to the house of lords, he was, on the 10th of September the same year, attainted of high treason. But what is much more remarkable, his new engagements with the Pretender had the same issue, for the year 1715 was scarcely expired, when the seals and papers of his new office of secretary were demanded, and given up; and this was soon followed by an accusation, branched into seven articles, in which he was charged with treason, incapacity, and neglect. Thus, discarded by the pretender, he resolved, if possible, to make his peace at home; and immediately applying to this task all that activity which was natural to him, he procured, through the mediation of the earl of Stair, the English ambassador at the court of France, a promise of a pardon from the king, on certain conditions; his majesty also, in 1716, created Sir Henry St. John, his father, baron of Battersea, and viscount St. John. Such a variety of distressful circumstances threw him into a state of reflection, and this produced, by way of relief, his *Reflections upon exile*, in which he, with great art and elegance, represents his own exile as proceeding solely from the malice of his enemies to one who had served his country with ability and integrity; and, by the magic of his pen, it is transformed into an honourable station. The following year he drew up a vindication of his whole conduct with respect to the Tories, in the form of a letter to Sir William Wyndham, which is written with great elegance and address. The lord Bolingbroke still continued in France, sometimes in the country, and sometimes in the capital, till 1723, when the king was pleased to grant him a full and free pardon. Upon the first notice of this favour, the expectation of which

had been the governing principle of his conduct, he returned to his native country. About two years after, his lordship having obtained an act of parliament to restore him to his family and inheritance, and to enable him to possess any purchase he should make, pitched upon a seat of lord Tankerville, at Dowley, near Uxbridge, where he settled, and improved it into a most elegant villa. Here he amused himself with rural employments, and with corresponding and conversing with Pope, Swift, and his other friends. But he was still unsatisfied, for he was yet no more than a titular lord, and stood excluded from the house of peers; and imputing this to the ill offices of Sir Robert Walpole, he, in 1726, embarked in the opposition to that minister, and distinguished himself by writing a multitude of pieces against him, consisting of papers in the *Craftsman*, and several pamphlets. At length, upon a disagreement with his principal coadjutors, he laid down his pen, and, in 1735, returned to France, where he began a course of letters on the study and use of history, for the use of the lord Cornbury, to whom they were addressed. But upon the death of his father, who lived to be extremely old, he came back to England, and settled at Battersea, where he spent the remainder of his life, and died the 15th of November 1751, at near 80 years of age. His lordship's estate and honours descended to his nephew, the present lord Bolingbroke. The care and benefit of his manuscripts he left to Mr Mallet, who published them, together with the works before printed, in five volumes quarto: but as some of these works, then first printed, contain many things which clash with the great truths of revelation, they not only exposed the deceased author to the animadversion of several divines, but occasioned a presentment of his works by the grand jury of Westminster. Besides his general works already mentioned, several of his letters are preserved with Pope's, and two or three of his little pieces of poetry are extant, for which he had a natural and easy turn. There have been also published several letters on political subjects, not republished in his works, and likewise a volume published in his lordship's name, called *Reflections concerning innate moral principles*, written in French by the late lord Bolingbroke, and translated into English. *Mr. Walpole's Catalogue of Royal and Noble Authors.*

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SAKER, a small sort of cannon, of which there are three species, extraordinary, ordinary, and middle-sized.

• **SALAMANCA**, one of the largest cities of Spain, in the province of Leon, is seated partly on a plain and partly on a hill, and is surrounded with strong walls. It has at least eight thousand houses, many fine structures, magnificent churches, a large square, fountains, and every thing else that can contribute to its embellishment and convenience. But that which renders it the most considerable is its university, consisting of twenty-four colleges. Salamanca is a bishop's see, and the cathedral is one of the most considerable in Spain, and has a handsome steeple surrounded with galleries. Besides the churches, colleges, and other buildings, there are several handsome convents, adorned with statues and pictures. Over the river Tormes, which washes the walls of the city, is a fine stone bridge, three hundred paces in length, built by the Romans. It is a place of great trade, and is inhabited by many of the nobility. Without the walls is a Roman causeway, which is broad and paved, and was repaired by the emperor Adrian, as appears from an inscription lately found. It is 37 miles S. E. of Miranda, and 88 N. W. of Madrid. Long. 5. 48. W. Lat. 41. 5. N.

SALAMANDER, in zoology, a name given by authors to several species of the lizard kind; but the principal are two, the *salamandra aquatica*, the water-newt, and the *salamandra terrestris*. The *salamandra aquatica* is the two-edged tail lizard, with four toes on the anterior, and five on the hinder feet. It grows to about four inches in length, and to the thickness of a man's finger; the back is of a deep shining brown, the belly of a bright and glossy yellow. The *salamandra terrestris*, or land salamander, is a species of lizard, the tail of which is short, and its colour of a fine black, marked with red spots of a bright and shining glossy appearance.

SALAMANDER'S BLOOD, among chemists, denotes the redness remaining in the receiver after distilling the spirit of nitre.

SALARY, a recompence made to a person for his pains or industry about another person's business, as in the case of officers, &c.

SALE, in general, signifies the transferring the property of goods from one to another, upon some valuable considera-

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tion, as where in a bargain one agrees to give another a certain sum of money for such goods, and thereupon gives the seller earnest, which he accepts; this is a perfect sale, and shall bind the buyer and seller.

SALEP, in the materia medica, the root of a species of orchis. This plant, which has six or seven long smooth narrow leaves, is variegated with dark coloured streaks or spots, issuing from the root; and one or two embracing the stalk, which is single, roundish, and striated: on its top appears a long loose spike of irregular naked, purplish red flowers, consisting each of six petals; one of which is large, cut into three sections, hanging downwards; the others smaller, forming a kind of hood above it, with a tail behind: the root consists of two roundish whitish tubercles, about the size of nutmegs, one plump and juicy, the other fungous and somewhat shrivelled, with a few large fibres at top. It is perennial, grows wild in shady grounds and moist meadows, and flowers in the beginning of May, or sooner. The plump roots or bulbs, the only part directed for medicinal use, have a faint somewhat unpleasant smell, and a viscid sweetish taste. They abound with a glutinous slimy juice, in virtue of which they have been found serviceable, like althea root and other mucilaginous vegetables, in a thin acrid state of the humours, and erosions of the intestines. They have been celebrated also for analeptic and aphrodisiac virtues, to which they appear to have little claim. The substance brought from the Eastern countries under the names of salep, falleb, and serapias, and recommended, like our orchis root, in bilious dysenteries, defluxions on the breast, and as a restorative, appears to be no other than the prepared roots of some plants of the orchis kind, of which different species are said to be taken indiscriminately. The salep comes over in oval pieces, of a yellowish white colour, somewhat clear and pellucid, very hard and almost horny, of little or no smell, in taste like gum tragacanth. The common orchis root, boiled in water, freed from the skin, and afterwards suspended in the air to dry, gains exactly the same appearance: the roots thus prepared do not grow moist or mouldy in wet weather, which those that have been barely dried are very liable to do: reduced into powder, they soften or dissolve as it were in boiling water into a kind of mucilage, which may be diluted

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for use, with a large quantity of water, or with milk.

SALIENT, in fortification, denotes projecting. There are two kinds of angles, the one salient, which are those that present their points outwards; the other re-entering, which have their points inwards.

SALIENT, **SALIENT**, or **SAIL-LANT**, in heraldry, is applied to a lion or other beast, when its fore-legs are raised in a leaping posture.

SALIC, or **SALIQUE LAW**, *Lex Salica*, an ancient and fundamental law of the kingdom of France, usually supposed to have been made by Pharamond, or at least by Clovis, in virtue whereof males are only to inherit. Du Haillan, after a critical examination, declares it to have been an expedient of Philip the Long, in 1316, for the exclusion of the daughter of Lewis Hutin from inheriting the crown. Father Daniel, on the other hand, maintains, that it is quoted by authors more ancient than Philip the Long, and that Clovis is the real author of it. This law has not any particular regard to the crown of France; it only imports, in general, that in Salic land no part of the inheritance shall fall to any female, but the whole to the male sex. By Salic lands, or inheritances, were anciently denoted, among us, all lands, by whatever tenure held, whether noble or base, from the succession whereof women were excluded by the Salic law; for they were by it admitted to inherit nothing but moveables and purchases, wherever there were any males.

* **SALISBURY**, a pleasant city of Wiltshire, seated on the river Avon, the waters most of the principal streets, which are large and spacious. It has two markets, on Thursdays and Saturdays; and four fairs, on Tuesday after January 6, for cattle and woollen cloth; Whit-Monday and Tuesday for pedlar's goods and horses; and Tuesday after October 10, for hops, onions, and cheese. It has several handsome buildings, of which the cathedral is the chief. This is a fine Gothic structure, and is said to have as many doors as there are months in the year, as many windows as weeks, and as many pillars as days in the year; and has a lofty spire steeple that may be seen at a great distance. It has also a large cloyster of curious workmanship, and near it is the bishop's palace. The town-hall is a handsome building, and stands in a spacious market-place. It is governed by a mayor, re-

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corder, &c. and sends two members to parliament. It is 25 miles north-west of Southampton, and 84 west-by-south of London. Long. 1. 55. w. lat. 51. 34. N.

SALIVA, *Spittle*, a thin pellucid humour, separated from the arterial blood, by the glands about the mouth and fauces, and conveyed, by proper salival ducts, into the mouth, for several uses. It consists of a great deal of water or phlegm, and a volatile salt, and some add a sulphureous spirit; and is void both of taste and smell: its uses are very great; it moistens the throat, preserves it from the injuries of the air, and facilitates speech. Being mixed with aliment, it renders swallowing easy, and assists digestion by its aqueous, saline, and oily parts. Some imagine it to do the office of a menstruum, by mixing the oily and aqueous parts of the food more intimately, dissolving the saline parts, and procuring a fermentation in the stomach: but Dr. Drake is of opinion, that were the saliva acrimonious enough for this purpose, it must greatly offend the stomach, especially considering the quantities of it that many swallow, even upon an empty stomach. In hungry persons, says Boerhaave, it is fluid, acid, and copiously discharged; and in those who have fasted long, it is highly acid, penetrating, and resolvent. In farinaceous and succulent vegetables it not only produces a fermentation, but also augments one already begun. It is swallowed not only by brutes, but by human creatures, in a sound state, even when asleep. Too copious an evacuation of it, made voluntarily, produces loss of appetite, bad digestion, and an atrophy. By mastication therefore the saliva is expressed and accurately mixed with the attenuated food; which contributes, first, to the assimilation of the aliments to the nature of the body to be nourished; secondly, to the due mixture of the oleous to the aqueous parts: thirdly, to the solution of the saline parts: fourthly, to fermentation: fifthly, to a change of the taste and smell of the aliments: sixthly, to an augmentation of the intestine motion: seventhly, to a momentaneous relief from hunger: and eighthly, an application of the rapid parts, though insipid itself. See *Clyfication*, *Mastication*, *Digestion*, &c.

SALIVAL, an epithet applied to the glands and ducts which supply and secrete the saliva.

SALIVATION, in medicine, a promoting of the flux of saliva, by means of medicines,

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medicines, mostly by mercury. The chief use of salivation is in diseases belonging to the glands, and the membrana adiposa, and principally in the cure of the venereal disease, though it is sometimes also used in epidemic diseases, cutaneous diseases, &c. whose crises tend that way. See the articles *Pox*, &c.

SALLET, or **SALLAD**, a dish of eatable herbs, composed chiefly of crude fresh herbage, seasoned with salt, oil and vinegar; some add mustard, hard eggs, and sugar; others pepper; and others spices, with orange-peel, saffron, &c. The principal sallad-herbs, and those which usually make the basis of our sallets, are, lettuce, celeri, endive, cresses, raddish, and rape; to which are sometimes added purslane, spinach, sorrel, tarragon, burnet, corn-sallet, and chervil.

* **SALLUST**, or **CAIUS CRISPUS SALLUSTIUS**, a celebrated Latin historian, and one of the politest writers of ancient Rome, was a native of Amiternum, now called San Vittorina, in Italy. He was educated at Rome, and enjoyed there several considerable posts; but his avarice and debaucheries occasioned his being expelled the senate. Cæsar, however, restored him to the dignity of a senator; had him made prætor, and sent him into Numidia. Sallust pillaged that province, and returned to Rome so rich, that besides his house of Tivoli, he purchased a magnificent edifice on Mount Quirinal, with gardens belonging to it, which are still called the Gardens of Sallust. Eusebius tells us, that he married Terentia, who had been divorced by Cicero, and died in the 35th year before the Christian æra. He wrote two excellent works, which are still extant, Catiline's Conspiracy, and the War of Jugurtha. We have also some fragments of his Roman History. He ought not to be confounded with Sallust, his sister's son, who was the favourite of Augustus and Tiberius, to whom Horace addressed the second ode of his second book.

SALLY, in architecture, is what we more usually call projecture. See *Projection*.

SALLY, in the military art, the issuing out of the besieged from their town or fort, and falling upon the besiegers in their works, hinder the progress of their approaches, destroy their works, &c.

SALMO, **SALMON**, in ichthyology, a well known fish. It is distinguished from other fish of the truttaceous kind by these

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characters: it is of an oblong body, covered with very small scales, a small head, a sharp nose, and forked tail. Its back is bluish; the rest of its body whitish, or reddish, and usually spotted. Its under jaw is bent upwards, and that sometimes so much as to make itself a sinus, in the upper, by constant motion, and sometimes to perforate it. The salmon is first produced from its parent's spawn in fresh rivers, thence it goes into the sea to acquire its growth and feed; and, at the time of its full growth, and in the season for spawning, it removes into the fresh waters again. The salmon, in the different stages of its life and growth, has different names. The Latins call it, when young, *salar*, when of a middle growth *sario*, or *fario*, and only when full grown *salmo*. In England the fishermen have names for it in every year of its growth. In the first it is called a smelt, in the second a sprout, in the third year a mout, in the fourth a fork-tail, in the fifth a half-fish, finally, in the sixth it is called a salmon. This is the common agreement of our fishermen, though there are some who say the salmon comes much sooner to its full growth. *Willaghtby's Hist. Pisc.*

The salmon is bred in rivers, but goes every year from thence into the sea; and at a certain season of the year it always returns up into the fresh water again; and what is remarkable is, that, so far as observation has been able to trace them at any time, the same shoals of salmon always return into the same river out of which they swam, not into any other; so that the people who live on the salmon fishery are not afraid of having their rivers cleared, by all the fish in them going down into the sea, for they know that they will all return up to them again at a proper time. When the salmon has once entered a fresh river, he always swims up against the stream, and often will go an hundred leagues up a river in the large and long rivers; and the people at this vast distance from the mouth, have the pleasure of taking a fish, that is properly in part of the sea kind. It is also remarkable, that the rivers which most abound with salmon, do not make the seas about their mouths any more abound with them than others, particularly the harbour of Brest affords no salmon, tho' the river Chateaulin, which discharges itself into it, is the richest salmon river in France. Another singularity, in regard to the salmon, is their swimming up the rivers together in such vast numbers. It

is to be allowed, indeed, that herrings, mackrel, and many other fish, in the same manner appear on the coasts at certain seasons, in prodigious numbers; but the reasons for their coming together, in these quantities, are much more easily explained, than that of the salmon's doing so. The herrings, when they come in such prodigious shoals to the coast of Normandy, have been found to be allured thither in these numbers by a prodigious quantity of a particular sort of sea worms, which are their favourite food, and which are found to cover the whole surface of the sea at that time. Rondeletius has described these insects under the name of sea-caterpillars; they always appear in the months of June, July, and August, which are the herring seasons at that part of the world; and probably the same cause will be found to bring them to other places, if sufficiently enquired into, as these and some other fish come to certain places in shoals to get food. The salmon do it, in order to propagate their species. The spawn of the salmon is never deposited but in rivers, and, at the time that these fish are found up the rivers, it is only with this intent; the females go first, and the males follow as far as the others please to lead them, which is usually to some convenient place in shallow water, where the spawn, when deposited, is not buried under too great a quantity of water, but has the advantage of a continual warmth from the sun's heat. Salmon do not equally frequent all rivers, though they may seem to us equally proper for their reception. There are two rivers which open themselves into the harbour of Brest, very near one another; the one of these is famous for the quantity of salmon in it, and the great advantage of the fishery; the other never has any of these fish in it. It most probably is owing to their finding plenty of food, and proper places for the depositing their spawn in the one of these rivers, and not in the other, that makes this regular choice. *Des Landes, Trait. Phys.*

* **SALMONEUS**, in fabulous history, a king of Elis, who presuming to personate Jupiter, by driving his chariot over a high bridge of brass, he had erected over a part of the city, and casting flaming torches from thence, to imitate thunder and lightning, that God was so provoked at his impiety, that he struck him with a thunderbolt, and cast him into Tartarus.

SALON, or **SALOON**, in architecture, a very lofty spacious hall, vaulted at top, and sometimes comprehending two stories or ranges of windows. The salon is a grand room in the middle of a building, or at the head of a gallery, &c. Its faces or sides ought all to have a symmetry with each other; and as it usually takes up the height of two stories, its ceiling, as Daviler observes, should be with a more moderate sweep. Salons are frequently built square, and sometimes octagonal.

SALT, *Sal*, in natural history, the name of a series or subdivision of fossils, naturally and essentially simple, not inflammable, and soluble in water. Dr. Shaw defines salt to be a substance that readily dissolves in water, tastes sharp or pungent upon the tongue, and has a great disposition to unite with earth, so as to appear in a solid form; as in common salt, alum, &c. Salts then are fossil bodies, friable, pellucid, not inflammable, but fusible by fire, and congelating again in the cold; soluble in water, so as to disappear in it, naturally concreting into regularly figured crystals, and impressing a sensation of acrimony on the tongue. These are the characters and qualities common to all salts, and to no other bodies: and these they always manifest when pure and freed from heterogeneous substances; but in the state in which they are naturally found in the earth, though they have that in their taste alone which may sufficiently distinguish them, yet they do not exhibit all their genuine characters: some of them being found solid and pure, either within the earth or on its surface, but commonly without their proper form; others embodied in earths and stones, as the particles of metals in their ores; and others in a fluid state suspended in waters. Of the fossils of this class, nature therefore affords us three distinct orders, and under those they are distinguishable into five genera. The salts of the first order are those found native and pure, either in the earth or without its surface, and exhibiting all other natural characters, though often without their proper form. Of the second, are those found not native, but in form of ores, never pure, but distinguishable by their taste, and immersed in and blended with the constituent matter of earths and stones in extremely small particles. And of the third are those naturally found suspended in waters, and in a fluid form, but ready

to assume their proper figures on the evaporation of a part of that water. Of the first of these orders are the common alimentary salt, or muria, and the natum or nitre of the ancients; of the second are alum and nitre; and of the third are borax and halcryptum, an alkaline salt hid in the chalybeate waters.

Alimentary salt, or muria, is found under a great variety of forms in its different states; but is immediately distinguished by applying it to the tongue, and always assumes a cubic, pyramidal, or parallelopiped figure after solution, and a regular crystallization. It is sustained in vast quantities in a liquid form among sea-water, and that of salt springs; but is also found solid in the bowels of the earth in vast masses, which are either of a fine pellucid structure, and called sal-gem; or various, debased and striated, resembling the fibrositate, and is the sal-ammaniac of the ancients. But in which ever of these forms this salt is found, it affords the same crystals on evaporation: these, according to the degree of heat used in the evaporation, are either pyramidal, cubic, or parallelopiped. All these salts are soluble in water; but they require different quantities of it to dissolve them, and this makes one of their criterions. All this salt requires thrice and one seventh part its own quantity of water, to make a perfect solution. The sea-water, in different parts of the world, is very differently saturated with it, some parts containing twice as much as others. But that of the salt-springs is always much more saturated with it, than the strongest of the sea-water; in some places it is found loaded with nearly as much as it could be made to contain, some springs yielding a brine that affords near a quarter of a pound of salt, from the pound weight of this liquor, and many of them being so strongly impregnated, that the workmen are obliged to let them down or lower them, by mixing them with a large quantity of sea or common water, before they are fit to be boiled for the salt: the common run of sea-water does not hold so much as one fourth part of this quantity, some not one eighth of it. The salt produced from the sea-water of all the parts of the world, and from the brine of all the springs of the world, is absolutely the same; but differs in strength, and some other qualities, according to the operation by which it is made. In general, the quicker the liquor is evaporated, the weaker is the

salt; the more time is employed in the process, the stronger. This is not wonderful, when we consider, that, over a gentle heat, water alone, or almost alone, evaporates from the liquor; but over a more violent fire, a part of the strength or acid of the salt is raised with it. It is upon this principle, and owing to this cause, that we find the salt of our salt springs, which is usually sold under the name of basket-salt, the weakest of all. It is not that there is any difference in the waters from which these several kinds of salt are produced, that they appear to us in different degrees of strength; but that the people who work the brine-pits, make the salt with less expense of the workman's time; that the sea-salt is formed over somewhat slower fires; and that the bay-salt is made only by the sun's heat, where the process is very long, and the heat very moderate, and the salt is found strong in proportion. This is so indisputable a truth, that once every week, a very strong salt, little inferior to bay-salt in that quality, is made at the brine-pit works, where the common run of the salt is the weakest in the world. The liquor is the same in this case, but the workmen who do not work on Sundays, leave a pan full to evaporate slowly over the fire, which they prepare on the Saturday night, and the moderate heat and length of time under which this weekly parcel of salt is made, render it very different from the common salt of the works, both in form and qualities: it is found to be made up of large and hard grains, instead of the small and soft ones of the common kind; and is vastly superior to it in strength. This circumstance, overlooked by the workmen, and even by their masters too, for many years, gave the hint to Mr. Downds, and afterwards to the very ingenious Dr. Browning, author of an excellent treatise on this subject; to propose to the government a method of making a salt fit for all the purposes for which we buy it of our neighbours, only by a new, that is, a slower way of working our own brines. The latter of these gentlemen has proved incontestably, that we may, if we will encourage proper manufactures, have common salt of every kind made at home, equal in strength, and equally fit for all purposes, with the salt of any part of the world.

After these accounts of the muria of common salt under its different forms, and as expressed by different names, it

remains

remains to treat of its qualities and virtues in general. It resolves spontaneously in the air, but this in different times, according to the dampness or dryness of that element, and according to its own laxer or firmer structure. The coarsest salts dissolve sooner than the finer, and there are even some pieces of sal gemmae so firm, that they are scarce to be at all affected, even on their surface, by the moistest common air.

Common salt, added to aqua fortis, enables it to dissolve gold, making it into what is called aqua regia; by distillation it yields a strong and acid spirit; it is, the most of all substances, endued with keeping animal bodies from putrefaction, and it also preserves vegetables in the same manner in long digestions. In medicine, it is a common ingredient in clysters, and serves to soften and bring away indurated faeces. Suppositories are also made of a mixture of it with honey, and are put up the fundament, to promote a tendency to dissections. Aloes and colocynth are sometimes added on these occasions, when there is required more power in the medicine. In apoplectic cases, it is generally an ingredient among the stimulating things administered in clysters; only it is necessary to have this caution, that if there appear reason to suspect an inflammation of the intestines, or but a tendency to it, every thing of this kind is to be avoided.

Common salt that has not been exposed to a fire, makes no change in the colour of syrup of violets; it does not make any effervescence with oil of tartar, nor does it make lime-water turbid; but added to spirit of sal ammoniac, it manifests some signs of a latent acidity, by rendering it cloudy: on the contrary, also, it manifests something of an alkaline nature, by rendering a solution of mercury whitish; and it raises an effervescence with oil of vitriol, attended with heat.

On solution in water, common salt manifests also two very different principles after evaporation. When reduced to a proper consistence, that is, when the quantity of water is not more than as three to one to that of the salt, a part of it concretes into grains of salt of the ordinary kind; but there remains yet in the liquor, after all that can be separated this way has been procured, a strong taste of a saline nature; the salt that gives it this, will never be brought to crystallize, but must be separated by eva-

porating all the liquor away; it is then found to be of an alkaline nature, assuming no regular form in its crystals, and easily imbibing the humidity of the air, and running into a liquor with it.

The basis of sea-salt, therefore, is a mineral alkali, which is so intimately blended with its peculiar acid, that the latter has scarce any power of exerting itself.

The acid, drawn by distillation from sea-salt, turns the syrup of violets red, and ferments vehemently, though without heat, with oil of tartar; but it does not heat on being poured into lime-water. This spirit is the only one that can be properly called a solvent for gold and for tin, but silver and lead resist it. The acids of nitre and vitriol, also, obtain the same qualities on being mixed with it, and become aque regales. If this acid be perfectly saturated with salt of tartar, crystals of the form and qualities of those of common salt may be obtained from the mixture; these crystals are called regenerated sea-salt, and serve to prove what we observed above, that an alkali is the basis of sea-salt, and that more alkalies than one may serve to that purpose with the peculiar acid, which is the essential part of this salt.

Physicians are of opinion, that sea-salt has the same effects in the human body that it has out of it, in checking fermentation, and preventing putrefaction; they therefore esteem it of good use mixed with the generality of our foods in the stomach: they are of opinion also, that it carries its effect into the blood, and has the qualities of a moderate dryer, detergent and attenuant, added to those of a stimulant, which common reason declares it to be. Hence may be deduced all the virtues attributed to salt, as an aperient, stomachic, or warming medicine, and a provocative to venery; but in what degree it possesses all these qualities, we are, by its universal use in foods, prevented from being able to determine. Van Helmont recommends it as a good preservative against the stone and gravel: he has been severely censured for this by others, who are of opinion, that all salted foods, such as salt beef, and the like, are very bad in those cases; but both parties may be in the right; for there is a great deal of difference between common salt eaten with the fresh juices of our food, and the brine and pickle into which it runs in the time

time of its being left upon the meat preserved by it. Salt is very properly put into the mouths of people in apoplectic fits, as it not only irritates but attenuates the juices there, and promotes a discharge of them; and in a palsy which affects the tongue, a sage-tear, bruised and covered with salt, has been a famous remedy among the good women, and not without reason.

Mixed with bran, and heated in a canvas bag, it is recommended to be applied externally to the head in head-achs, arising from a moist cause, and in defluxions; and we find the old physicians very strenuously recommending a cataplasm made of the same ingredients for pains.

Methods of making alimentary SALT are these: 1. By the evaporation of the sun's rays: this is the most easy and simple method of all, when the water of ponds and lakes, whether natural or artificial, impregnated with salt, being wholly exhausted by the force of the sun and air, the salt is concreted into a hard crust at the bottom of the lake, and is what commonly goes by the name of bay-salt; the crystals of which differ in size, according to the different degrees of heat, and the time it lies in the pits. All bay-salt has some mud, slime, or the like, in the making, and some kinds are mixed with the bittern-salt, or what is called Epsom-salt; they are all more white while dry, and more pellucid when moist, and they differ in colour, according to the earth which makes the bottoms of the pits. Thus, some of the French bay-salt is grey, some reddish, and some white, according as a blue clay has lined the pits, or a red, or white one. Some kinds have an agreeable smell in large heaps; such are the Portugal, and the Hampshire bay-salts; and this seems owing to the sea-water they were made from, having a bituminous matter in it. It differs also greatly in taste, according to the various foreign mixtures it contains; and it will often alter in taste, and other qualities, by long keeping: for, in general, it is much better for use, after it has been kept some time in a dry place, than when it is first made.

2. By boiling, or coction, the most convenient works for which process are constructed in the following manner: the saltern or boiling-house is erected near the sea-shore, and is furnished with a furnace and one or two large pans, which are commonly made of iron plates, joined together with nails, and the joints

filled with a strong cement; and the bottoms of the pans are prevented from bending down, by being supported by strong iron bars.

The salt pan being filled with sea-water, a strong fire of pit-coal is lighted in the furnace, and then, for a pan which contains about fourteen hundred gallons, the salt-boiler takes the whites of three eggs, and incorporates them all with two or three gallons of sea-water, which he pours into the salt-pan, while the water contained therein is only lukewarm, and mixes this with the rest, by stirring it about with a rake. In many places they use instead of eggs the blood of sheep or oxen to clarify the sea-water; and in Scotland they do not give themselves the trouble of clarifying it at all. As the water heats, there arises a black frothy scum upon it, which is to be taken off with wooden skimners. After this, the water appears perfectly clear, and, by boiling it briskly about four hours, a pan loaded in the common way, that is about fifteen inches deep, will begin to form crystals upon its surface. The pan is then filled up a second time with fresh sea-water; and, about the time when it is half-filled, the scatch pans are taken out and emptied of a white powder, seeming a kind of calcareous earth, which separates itself from the sea-water, during its boiling, before the salt begins to shoot. When these have been emptied, they are again put in their places, where they are afterwards filled again. This powder, being violently agitated by the boiling liquor, does not subside till it comes to the corners of the pan, where the motion of the mass is smaller, and it there falls into these pans placed on purpose to receive it.

The second filling of the pan is boiled down after clarifying in the same manner as the first, and so a third and a fourth; but in the evaporation of the fourth, when the crystals begin to form themselves, they slacken the fire, and only keep the liquor simmering. In this heat they keep it all the while that the salt is granulating, which is nine or ten hours. The granules or crystals all fall to the bottom of the pan; and when the water is almost all evaporated, and the salt nearly dry at the bottom, they rake it altogether into a long heap on one side of the pan, where it lies a while to drain from the brine, and then is put into barrows, and carried to the storehouse, and delivered into the custody of his majesty's officers,

officers. In this manner the whole process is usually performed in twenty-four hours, the salt being commonly drawn out every morning. This is the method in most of our salt works, but in some they fill the pan seven times before they boil up the salt, and so take it out but once in two days, or five times in a fortnight. In the common way of four boilings, a pan of the usual size, containing one thousand three hundred gallons, they draw from fifteen to twenty bushels of salt every day, each bushel weighing fifty-six pounds.

When the salt is carried into the storehouse, it is put into drabs, which are partitions, like stalls for horses, lined at three sides, and the bottom with boards, and having a sliding-board on the fore-side to draw up on occasion. The bottoms are made shelving, being highest at the back, and gradually inclining forwards; by this means the brine remaining among the salt, easily separates and runs from it, and the salt in three or four days becomes sufficiently dry; in some places they use cribs and harrows, which are long and conic wicker-baskets for this purpose, and in some places wooden troughs with holes in the bottom. The saline liquor which remains after the making of salt is what is called bitter-tern.

Much in the same manner is the salt obtained from the brine of salt springs, &c. White salt is prepared from sea-water, or any other kind of salt-water, first heightened into a strong brine by the heat of the sun, and the operation of the air. It may also be prepared from a strong brine, or lixivium, drawn from earths, stones, or sands, strongly impregnated with common salt. Refined rock salt is that obtained by dissolving fossil or rock-salt in salt of fresh water, and afterwards boiling the solution. And, lastly, salt upon salt is made from bay-salt dissolved in sea-water, or other water, and boiled to a white salt.

SALT, in chemistry, makes one of the leading and most active principles, or elements, procurable from mixed bodies.

SALTIER, in heraldry, an ordinary in form of a St. Andrew's cross; which may be said to be composed of a bend dexter and sinister, crossing each other in the center of the escutcheon.

SALT PETRE, the same with nitre. See *Nitre*.

* **SALTZBURG**, a large city of Germany, and capital of the archbishoprick of the same name. The archbishop, who resides here, is a sovereign of the district. It is well built, handsome, populous, and defended by a castle, seated upon a mountain. The archbishop's palace is a superb structure, with a very handsome garden, adorned with statues. This is his summer habitation, and in that for the winter they reckon 163 apartments, all elegantly furnished, without reckoning the halls and galleries. The houses are generally five stories high; but the streets are narrow. The university was founded in 1623, by the archbishop of Lodron, and depends on the Benedictine monks of this town, who have since built a very handsome church. It is situate on the side of the river Saltz, fifty miles South of Passaw, seventy east by south of Munich, and 155 west by south of Vicuna. Long. 13. 15. E. Lat. 47. 42. N.

SALVAGE MONEY, a reward allowed by the civil and statute law, for the saving of ships or goods from the danger of the seas, pirates, or enemies. Where any ship is in danger of being stranded, or driven on shore, justices of the peace are to command the constables to assemble as many persons as are necessary to preserve it; and, on its being preserved by their means, the persons assisting therein shall, in thirty days after, be paid a reasonable reward for the salvage, otherwise the ship or goods shall remain in the custody of the officers of the customs, as a security for the same.

SALVATELLA, in anatomy, a branch of the axillary vein, which runs over the back of the hand, towards the little finger.

SALUTATION, the act of saluting, greeting, or paying respect and reverence to any one. There is a great variety in the forms of salutation. The orientals salute by uncovering their feet, laying their hands on their breasts, &c. In England, we salute by uncovering the head, bending the body, &c. The pope makes no reverence to any mortal, except the emperor, to whom he stoops a very little, when he permits him to kiss his lips. A prince, or person of extraordinary quality, is saluted at his entering a garrison by the firing of the cannon round the place. In the field, when a regiment is to be reviewed by a king, or general, the drums beat, as he approaches, and the officers salute him one after another, as

he passes by, stepping back with the right foot and hand, bowing their shoulders to the ground, and then recovering them gently, bridging up the foot and hand, planting them; which done, they pull off their hats without bowing. The ensigns salute all together, bringing down their colours near the ground directly before them at one motion, and having taken them up again, gently lift their hats. At sea, they salute by a discharge of cannon, which is greater or less, according to the degree of respect they would shew; and here ships always salute with an odd number of guns, and galleys with an even one. To salute with muskets is to fire one, two, or three volleys; which is a method of salutation that sometimes precedes that of cannon, and is used on occasion of fleets. After the cannon, they also sometimes salute or hail with the voice, by a joint shout of all the ship's company, repeated three times; which salutation also occasionally obtains where they carry no guns, or do not care to discharge any. Saluting with the flag is performed two ways, either by holding it close to the staff so as it cannot flutter, or by striking it so as it cannot be seen at all, which is the most respectful. Saluting with the sails is performed by hovering the top-sails half way of the masts. Only those vessels that carry no guns salute with the sails.

SAMBUCUS, *the Elder*, in botany, a genus of plants, the flower of which consists of a single rotated semiquinquifid petal; its fruit is a roundish unilocular berry, containing three seeds, convex on one side and angulated on the other. The inner green bark of this shrub is gently cathartic: an infusion of it in wine, or its expressed juice, in the dose of half an ounce, or an ounce, is said to purge moderately; and in small doses, to prove an efficacious deobstruent, capable of promoting all the fluid secretions. The young buds, or rudiments of the leaves, are strongly purgative, but are reckoned unsafe. The expressed juice, inspissated to the consistence of a rob, proves an useful aperient medicine, which is good in obstructions of the viscera, and promotes the natural evacuations.

SAMBUCUS is also an ancient musical wind-instrument resembling a flute; probably thus called, because made of elder.

SAMIAN EARTH, in the materia medica, the name of two species of marl

used in medicine, viz. 1. The white kind, called by the ancients, collyrium Samium; being astringent, and therefore good in diarrhæas, dysenteries, and hæmorrhages; they also used it externally in inflammations of all kinds. 2. The brownish-white kind, called after Samius, by Dioscorides; this also stands recommended as an astringent.

SANBENITO, or **SACO BENITO**, a kind of linen garment worn by persons condemned by the inquisition. See *Inquisition* and *Act of Faith*.

SANCTIFICATION, the act of sanctifying, or rendering a thing holy. The reformed divines define sanctification to be an act of God's grace, by which a person's desires and affections are alienated from the world, and by which he is made to die to sin, and to live to righteousness; or, in other words, to feel an abhorrence of all vice, and a love of virtue and religion.

SANCTION, the authority given to a judicial act, by which it becomes legal and authentic.

SANCTUARY, among the Jews, also called Sanctum Sanctorum, or holy of holies, was the holiest and most retired part of the temple of Jerusalem, in which the ark of the covenant was preserved, and into which none but the high priest was allowed to enter, and that only once a year, to intercede for the people. Some distinguish the sanctuary from the sanctum sanctorum, and maintain that the whole temple was called the sanctuary.

To try and examine any thing by the weight of the sanctuary, is to examine it by a just and equal scale: because among the Jews, it was the custom of the priests to keep stone weights, to serve as standards for regulating all weights by, though these were not at all different from the royal, or profane weights.

Sanctuary, in the Romish church, is also used for that part of the church in which the altar is placed, encompassed with a rail or balustrade.

SANCTUARY, in our ancient customs, is the same with asylum. See *Asylum*.

SAND, *Arena*, in natural history, a genus of fossils, the characters of which are, that they are found in minute concretions; forming together a kind of powder, the genuine particles of which are all of a tendency to one determinate shape, and appear regular, though more or less complete concretions; not to be

dissolved or disunited by water, or formed into a coherent mass by means of it, but retaining their figure in it; transparent, vitrifiable by extreme heat, and not dissoluble in, nor effervescing with, acids. Sands are subject to be variously blended both with homogeneous and heterogeneous substances, as that of tales, &c. and hence, as well as from their various colours, are subdivided into, 1. White sands, whether pure or mixed with other arenaceous or heterogeneous particles; of all which there are several species, differing no less in the fineness of their particles, than in the different degrees of colour, from a bright and shining white, to a brownish, yellowish, greenish, &c. white. 2. The red and reddish sands, both pure and impure. 3. The yellow sands, whether pure or mixed, are also very numerous. 4. The brown sands, distinguished in the same manner. 5. The black sands, whereof there are only two species, viz. a fine shining greyish black sand, and another of a fine shining reddish-black colour. 6. The green kind, of which there is only one known species, viz. a coarse variegated dusky green sand, common in Virginia. Sand is of great use in the glass manufacture; the white writing sand being employed for making of the white glass, and a coarse greenish-looking sand for the green glass.

In agriculture, it seems to be the office of sand to make unctuous earth fertile, and fit to support vegetables, &c. For earth alone, we find, is liable to ecalesce, and gather into a hard coherent mass, as appears in clay; and being thus embodied, and as it were glued together, is no way disposed to nourish vegetables. But if such earth be mixed with sand, its pores are thereby kept open, and the earth itself loose, so as thus to give room for the juices to ascend, and for plants to be nourished thereby. A vegetable planted only in sand, or in a fat glebe, or in earth, receives little growth or increase; but a mixture of both renders the mass fertile. In effect, earth is in some measure made organical by means of sand; pores and spaces, something analogous to vessels, being thereby maintained, by which the juices may be conveyed, prepared, digested, circulated, and at length discharged.

SAND-BAGS, in the art of war, bags filled with earth or sand, holding each about a cubic foot: their use is to raise parapets in haste, or to repair what is beaten down.

SAND-LANDS, or **SANDY LANDS**, in agriculture, are made up of sands of different colours and qualities; as white, blackish, reddish, or yellowish; and in the size of their particles, some being milder or harsher, and others very light, seeming mere dust. The grey, black, and ash-coloured sands are the worst of all, and are generally found on heaths and commons. The most suitable plants for arable lands of this kind are white oats, rye, black wheat, and turneps: the natural produce in weeds is quick-grass, sorrel, broom, furze, fern, and heath. The best manure for them is either marl, or such clay as will break with the frosts. Cow-dung is also said to be good for such lands; and many use with success chalk, mud, and the half-rotten straw of dungbills.

SANDAL, in antiquity, a rich kind of slipper, worn on the feet by the Greek and Roman ladies, made of gold, silk, or other precious stuff, consisting of a sole, with an hollow at one extreme to embrace the ankle, but leaving the upper part of the foot bare.

SANDARACH, in natural history, a very beautiful native fossil, tho' too often confounded with the common facitious red arsenic, and with the red matter formed by melting the common yellow orpiment. It is a pure substance, of a very even and regular structure, is throughout of that colour which our dyers term an orange-scarlet, and is considerably transparent even in the thickest pieces. But though with respect to colour it has the advantage of cinnabar while in the mass, it is vastly inferior to it when both are reduced to powders. It is moderately hard, and remarkably heavy, and when exposed to a moderate heat, melts and flows like oil; if set on fire, it burns very briskly. It is found in Saxony and Bohemia, in the copper and silver mines, and is sold to the painters, who find it a very fine and valuable red: but its virtues or qualities in medicine are no more ascertained at this time, than those of the yellow orpiment.

Gum SANDARACH, is a dry and hard resin, usually met with in loose granules, of the bigness of a pea, a horse-bean, or larger; of a pale whitish yellow, transparent, and of a resinous sinell, brittle, very inflammable, of an acrid and aromatic taste, and diffusing a very pleasant smell when burning. It is produced from a species of the juniper, and the *cedrus baccifera*. See *Juniper*.

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It flows only from these trees in hot countries; but the natives promote its discharge by making incisions in the bark.

What is obtained from the cedar is more fragrant, especially when burnt; but it is seldom to be met with separate in the shops, both being mixed together under the common name of sandarach.

Sandarach is good in diarrhoeas, and in hæmorrhages; where its dose is from ten grains to half a dram: it is also sometimes prescribed in gonorrhœas, and the fluor albus; but at present it is much disused in medicine. It is, however, much used by our writing-masters, who make a powder of it which they call pounce.

The varnish-makers make a kind of varnish of it by dissolving it in oil of turpentine, or linseed, or in spirit of wine.

SANDIVER, a whitish salt, continually cast from the metal, as it is called, whereof glass is made; and swimming on its surface, is skimmed off. Sandiver is also plentifully thrown out in the eruptions of volcanos; some is of a fine white, and others tinged bluish or yellowish. Sandiver is detergent, and good for foulnesses of the skin. It is also used by gilders of iron.

SANDIX, a kind of minium, or red-lead, made of ceruse; but much inferior to the true minium.

SANGUIFICATION, in the animal economy, the conversion of chyle into true blood.

SANGUINARIA, BLOOD-WORT, a genus of plants, the flower of which consists of eight very patent petals; and the fruit is an oblong ventricose capsule, containing a great many roundish and acuminated seeds.

SANGUINE, in general, something abounding with, or resembling blood.

Among heralds, the term sanguine is often given to the colour more usually called murrey; being made of red lake tinged with a little Spanish brown; it is chiefly used in the coats of the knights of the Bath, and is represented, in engraving, by hatches like those of purple. See *Purple*.

SANGUIS, BLOOD, in the animal economy. See *Blood*.

SANHEDRIM, or SANHEDRIN, among the Jews, the great council of the nation, consisting of seventy senators, taken partly from among the priests and Levites, and partly out of the inferior judges, who formed what is called the

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lesser sanhedrim. The room they met in was a rotunda, half of which was built without the temple, and half within. The nasi, or president of the sanhedrim, sat upon a throne, with his deputy on his right hand, his sub-deputy on his left, and the other senators ranged in order on each side. The authority of this council was very extensive, for they decided such causes as were brought before them by way of appeal from the inferior courts; and the king, the high priests, and prophets, were under the jurisdiction of this tribunal. They had the right of judging in capital cases, and sentence of death might not be pronounced in any other place; for which reason the Jews were forced to quit this hall, when the power of life and death was taken out of their hands, forty years before the destruction of the temple, and three years before the death of Christ. There were several inferior sanhedrims in Palestine, each of which consisted of twenty-three persons; all these depended on the great sanhedrim of Jerusalem.

SANIES, in medicine, a serous putrid matter, issuing from wounds; it differs from pus, which is thicker and whiter.

SANTALUM, in the materia medica, a hard, odoriferous medicinal wood, brought from the East-Indies, of which there are three sorts, viz. the yellow, white, and red. All these sorts are attenuants, and all have an astringency, but the red most of all. They are accounted cordials, and are said to be good in obstructions of the viscera, but they are little used, except as ingredients in some of the compositions of the shops.

SAP, in physiology, a juice furnished by the earth, and changed into the plant, consisting of fossil parts, other parts derived from the air and rain, and others from putrified animals, plants, &c. See *Juice*.

This juice enters the plant in form of a fine and subtil water, which the nearer it is to the root, the more it retains of its proper nature; and the farther from the root, and the more action it has sustained, the nearer it approaches to the nature of the vegetable: consequently, when the juice enters the root it is earthy, watery, poor, acid, and scarcely oleaginous at all. In the trunk and branches it is farther prepared, though it still continues acid, as we find by tapping a tree in the month of February. The sap being here carried to the germs or buds, is more concocted; and here having un-

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folded the leaves, these come to serve as lungs for the circulation and farther preparation of the juice. By such means is the sap still farther altered and digested, as it is farther in the petals or leaves of the flowers, which transmit the juice, now brought to a farther subtilty, to the stamina; these communicate it to the farina; or dust, in the apices, which is, as it were, the male seed of the plant; where having undergone a farther maturation, it is shed into the pistil, which performs the office of an uterus or womb; and thus having acquired its last perfection, it gives rise to a new fruit or plant. The sap having thus gone its stage, from the root to the remote branches, and even the flower; and having, in every part of its progress, deposited something both for aliment and defence, what is redundant passes out into the bark, the vessels of which are insulated with those in which the sap mounts; and through which it descends to the root, and thence to the earth again. And thus a circulation is effected.

SAP, or **SAPP**, in the art of war, is the digging deep under the earth of the glacis, in order to open a covered passage into the moat. It is only a deep trench, covered at top with boards, hurdles, earth, sand-bags, &c. and is usually begun five or six fathoms from the salient angle of the glacis.

SAPINDUS, the **SOAP-BERRY-TREE**, in botany, a plant the flower of which consists of four oval petals; and the fruit of three capsules, each including a globose nut. The berries of this tree are used for washing, instead of soap, whence the English name.

SAPON, **SOAP**. See *Soap*.

SAPONARIA, **SOAPWORT**, in botany, a plant the flower of which consists of five petals, with a plain limb; and its fruit an unilocular capsule, containing a number of small seeds. The root of this plant is accounted aperient, corroborant, and sudorific; and even preferred by some to *sassafras* in these intentions. The leaves agitated with water, raise a saponaceous froth, which has nearly the same effects with solutions of soap itself, in taking out spots from cloths, whence the name.

SAPPHIRE, a pellucid gem, which in its finest state, is extremely beautiful and valuable, and second only to the diamond in lustre, hardness, and price. Its proper colour is a pure blue; in the finest specimens it is of the deepest azure, and

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in others varies into paleness in shades of all degrees between that and a pure crystal brightness and water, without the least tinge of colour, but with a lustre much superior to the crystal. They are distinguished into four sorts, viz. the blue sapphire, the white sapphire, the water sapphire, and the milk sapphire. The finest sapphires in the world are brought from the kingdom of Pegu, in the East-Indies, where some are found perfectly colourless, and others of all the shades of blue; these are all found in the pebble-form. We have very fine sapphires also, partly pebble, partly crystal-shaped, from Bismagar, Conanor, Calicut, and the island of Ceylon: these also are of all the shades of blue. And in Ceylon there are sometimes found a sort of bastard gems, of a mixed nature between the sapphire and ruby. The occidental are from Silesia, Bohemia, and many other parts of Europe; but though these are often very beautiful stones, they are greatly inferior, both in lustre and hardness, to the oriental.

* **SAPPHO**, a native of Mitylene, in the isle of Lesbos, was so greatly celebrated on account of her poems, that she was surnamed the Tenth Muse. She lived about 600 years before the Christian æra, and all the antients mention her with admiration. It is said, that being the widow of an inhabitant in the island of Andros, she conceived a violent passion for Phaon, a young poet of Erythea, and that she was so afflicted at his slighting her passion, that she threw herself from the top of a rock into the sea. There are now extant only Sappho's hymn to Venus, one of her odes, and some fragments of her writings; but the beauty and delicacy of these precious remains, make us regret the loss of her other poems.

SARABAND, a musical composition in triple time, the motions of which are slow and serious. Saraband is also a dance to the same measure, which usually terminates when the hand that beats rises; by which it is distinguished from a courant, which ends when the hand that beats the time falls; and is otherwise much the same as the minuet. The saraband is said to be originally derived from the Saracens, and is usually danced to the sound of the guitar or castanettes.

* **SARAGOSSA**, an archiepiscopal city of Spain, and capital of the kingdom of Arragon, with an university, and a tribunal of the inquisition. It is very large, handsome, and well built; and the streets are long, wide, handsomely paved, neat

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and clean. The houses are in general better than those of Madrid, and are five or six stories high, except in some streets, where they are but three. It is adorned with many magnificent buildings, there being seventeen large churches, and fourteen handsome monasteries. It is seated on the river Ebro, over which there are two very handsome bridges, the one of stone, the other of wood. This city has four gates, which look towards the four cardinal points; and, without the walls, towards New Castile, there is an old castle, surrounded with ditches, which was formerly the palace of the kings of Arragon, and now of the inquisition. The Ebro runs through the town, dividing it in two; and its banks are bordered with a handsome quay, which is the usual walk. The convents of Saragossa are very fine and richly adorned. The cathedral is a very large and handsome structure, built in the Gothic taste, and the choir is embellished with curious white marble; but the finest church is that of Nuestra Señora del Pilar, seated on the side of the Ebro, and is much frequented by pilgrims. The chapel, which contains the image of the Virgin Mary, is very handsome and rich, and is built under ground. The Virgin is placed on a marble pillar, holding in her arms a little Jesus; her garments, her crown, and the nich she stands in, are covered with jewels of inestimable value; about her are angels of massy silver, who hold flambeaux in their hands, besides fifty silver lamps. They have no spring or fountain, and therefore they have all their water from the river. The town is very rich and populous; and is inhabited by a great number of the nobility, merchants, and bankers. The air is pure and wholesome, though more hot than in other parts of Spain; and there are handsome houses, and agreeable orchards, for three miles round. It is 150 mile N. E. of Madrid. Long. 1. 18. W. lat. 41. 32. N.

SARCASM, in rhetoric, a keen satirical expression, which has the true point of satire, by which the orator scoffs and insults his enemy: such was that of the Jews to our Saviour, "He saved others, himself he cannot save."

SARCOCELE, in surgery, a spurious rupture, or hernia, wherein the testicle is considerably tumified or indurated, like a scirrhus, or much enlarged by a fleshy excrescence, which is frequently attended with acute pains, and sometimes ulcera-

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tion, so as to degenerate at last into a cancerous disposition.

SARCOCOLLA, in pharmacy, a gum-resin, which approaches greatly to the nature of the simple gums.

SARCOLOGY, that part of anatomy which treats of the soft parts, viz. the muscles, intestines, arteries, veins, nerves, and fat. See *Muscle*, *Intestine*, &c.

SARCOMA, in surgery, denotes any fleshy excrescence.

Sarcomata of the nose, eyes, &c. may be sometimes removed by caustics; but the extirpating them with the knife or scissars, is the safest and most eligible method. The wound should be suffered to bleed a while, after which it may be washed with a collyrium made of aloe, tutty, and sugar of lead, mixed in rose-water.

SARCOPHAGOUS MEDICINES, in surgery, &c. those which eat away proud flesh, and otherwise called caustics.

SARCOTICS, in surgery, medicines which generate flesh in wounds.

SARCULATION, in the ancient agriculture, a kind of hoeing, used to root up the weeds in their peas, &c.

* **SARDINIA**, an island of the Mediterranean, bounded by the Streight, which divides it from Corsica on the north, by the Tuscan sea, which flows between this island and Italy on the east, and by other parts of the Mediterranean sea on the south and west. It is 140 miles in length, and 60 in breadth. There is a pleasing variety of hills and valleys, and the soil is in general fruitful, and would produce corn, wine, and oil, in abundance, if it was manured; but the inhabitants are a lazy generation, and cultivate but a small part of it. On the coast there is a fishery of anchovies and coral, of which they send large quantities to Genoa and Leghorn. The bees and sheep are very common, as well as horses. This island was under the dominion of Spain till 1708, when Sir John Leake, the English admiral, reduced it to the obedience of the late emperor Charles VI. It was afterwards allotted to the duke of Savoy, as an equivalent for Sicily, with the title of king of Sardinia; under whose dominion it still remains. This island is divided into two parts; the one called Capo di Cagliari, lies to the south, and the other Capo di Lugary, which is seated to the north. The principal towns are Cagliari the capital, Oristagno, and Sassari.

SARDONIX, in natural history, a genus of semi-pellucid gems, of the onyx structure,

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structure, zoned or tabulated, and composed of the matter of the onyx variegated with that of the red or yellow cornelian. See *Cornelian* and *Onyx*.

Of this stone there are several beautiful species; as, 1. The thin zoned red sardonix, or whitish onyx, with thin snow-white and red zones. 2. The broad zoned red sardonix; or horny onyx, with punctuated zones. 3. The horny onyx, with whitish and yellow zones; and is properly the yellow sardonix, and the chrysolite onyx of the ancients. 4. The orange-coloured sardonix; or bluish white onyx, with orange-coloured and whitish zones.

SARSAPARILLA, the root of a species of bind-weed, growing in the Spanish West-Indies, and scarcely bearing the winters of our climate without shelter. The roots consist of a number of strings, of great length, about the thickness of a goose quill, or thicker, flexible, free from knots, composed of fibres running their whole length, so that they may be stript in pieces from one end to the other. They are covered with a thin, brownish, or yellowish-ash-coloured skin, under which lies a thicker-white, friable substance, and in the middle runs woody pith. This root has a farinaceous somewhat bitterish taste, and no smell. To water it communicates a reddish brown, to rectified spirit a yellowish red tincture, but gives no considerable taste to either menstruum. An extract, obtained by inspissating the spirituous tincture, has a weak, somewhat nauseous, balsamic bitterishness, which is followed by a slight, but durable purgency: the watery extract is much weaker, and in larger quantity.

Sarsaparilla was first brought into Europe by the Spaniards, about the year 1563, with the character of a specific for the cure of the lues venerea, which made its appearance a little before that time. Whatever good effects it might have produced in the warmer climates, it was found to be insufficient in this, inasmuch that many have denied it to have any virtue at all, and supposed that it could do no more, than by its farinaceous softness to obound the force of the gastric fluid, and thus weaken the appetite and digestion. It appears however from experience, that though greatly unequal to the character which it bore at first: yet, in many cases, strong decoctions of it drank plentifully and duly continued, are of very considerable service, for promoting perspiration, and what is called sweetening or purify-

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ing the blood and humours. In the Medical Observations, published by a society of physicians in London, there are several instances of its efficacy in venereal maladies, as an assistant to mercury, or when mercury had preceded its use: it oftentimes answered, and that speedily, after mercurial unctions, and long continued courses of strong decoctions of guaiacum, had failed. Dr. Harris says, that infants who have received the infection from the nurse, though full of pustules and ulcers, and sometimes troubled with nocturnal pains, are cured by sarsaparilla without mercurials: he directs the powder of the root to be mixed with the food.

SARTORIUS, in anatomy, is both an abductor and elevator, serving to move the legs upwards and forwards, determining them to cross each other, as tailors sit with them, whence the name; it rises from the internal part of the anterior and superior spine of the ileum; and descending obliquely, is inserted into the upper and inner part of the tibia.

SASSAFRAS, in pharmacy, the wood of an American tree, of the laurel kind, imported in large straight blocks: it is warm; aperient, and corroborant; and frequently employed, with good success for purifying and sweetening the blood and juices; for which purpose an infusion, in the way of tea, is a very pleasant drink: its oil is very fragrant, and possesses most of the virtues of the wood. It is an excellent diuretic and diaphoretic, and therefore good in obstructions of the viscera, cachexis, scorbutic complaints, and in the venereal disease.

SATELLITE, in astronomy, the same with a secondary planet, or moon; so called from its continually waiting upon, or revolving round one of the primary planets. See *Planet*.

Thus the moon may be called the satellite of the earth; but the term is chiefly applied to the new discovered planets, which make their revolution about Saturn and Jupiter.

SATIR, **SATIRE**, or **SATYR**. See *Satyr*.

SATISFACTION, in law, the giving a recompence for some injury done; or the payment of money due on bond, judgment, &c.

SATTIN, a kind of silk-stuff, the warp of which is very fine, and stands out so as to cover the coarser woof. Some sattins are plain, others wrought; some flowered with gold or silver, and others striped, &c. The Chinese sattins are most

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most valued, on account of their cleaning and bleaching easily; without losing any thing of their lustre: in other respects they are inferior to those of Europe.

SATTINET, a slight thin kind of sattin, commonly striped, and chiefly used by the ladies for summer night-gowns.

SATURATION, in chemistry, is the impregnating an acid with an alkali, or *vice versa*, till either will receive no more, and the mixture become neutral.

SATURDAY, the seventh day of the week, so called from the idol Seater, worshipped on this day by the ancient Saxons, and thought to be the same as the Saturn of the Latins. Saturday answers to the Jewish Sabbath. See *Sabbath*.

SATUREIA, **SAVORY**, in botany, a genus of plants, with a monopetalous ringent flower, and no pericarpium; the seeds, which are four, and roundish, being contained in the bottom of the cup. The leaves of summer-savory are very pungent, warm, and aromatic; and afford, in distillation with water, a subtle essential oil. Both are esteemed good in crudities of the stomach, asthma, and menstrual obstructions.

SATURN, Υ , in astronomy, the remotest of the superior planets, which, on account of its great distance from the sun, shines but with a feeble light. See *Planet*.

If an eye were placed in Saturn, the diameter of the sun would appear almost ten times less than it does to us; and consequently his disc, light, and heat will be there ninety times less. Saturn's year is almost thirty of ours; but the length of his day is yet uncertain, because the time of his revolution round his axis is not yet known; Mr. Huygens judges they are longer than the days of Jupiter. That great astronomer supposes the axis of Saturn to be perpendicular to the plane of his ring, and of the orbits of the satellites; if so, then there will be the same position of the equator and poles as to the fixed stars, as there is in our earth; the same pole-star and the fixed stars will appear to rise and set after the same manner, in the same latitudes. There is a vast inequality in the length of the day in several parts of this planet, and as great a diversity of summer and winter; which depends on the quantity of the inclination of the plane of the equator to the plane of the orbit of Saturn round the sun, which Huygens makes to be 51 degrees, which is almost one third more than our earth, where yet the differences

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and variety of seasons and weather are very sensible. For in Saturn, in the latitude of 50 degrees, the longest day will have no night at all, and the longest night will have no day. And the two frigid zones will be each of them 62 degrees abroad, at least ten times as large as the whole surface of our earth: The eye thus placed will be able to discern none of the planets but Jupiter, which will appear always to accompany the sun, and never to be from him above 37 degrees. The parallax of the sun in Saturn is but nine seconds, and therefore insensible; but the parallaxes of all his moons or satellites are very considerable; and therefore their distances from him will be easily computable.

Satellites of SATURN, are five moons; the first or inmost of which revolves about Saturn in one day, 21 hours, and eighteen minutes, at the distance of near two semi-diameters of the ring; the second in two days, 17 hours, and 41 minutes, at the distance of $1\frac{2}{3}$ semi-diameters; the third, in four days, 12 hours, and 25 minutes, at the distance of $3\frac{2}{3}$ semi-diameters; the fourth in 13 days, 22 hours, and 41 minutes, at the distance of eight semi diameters; and the fifth, in 70 days, 22 hours, and four minutes, at the distance of $23\frac{1}{6}$ semi-diameters of Saturn's ring. In the beginning of the year 1665, the celebrated Mr. Huygens, as already observed, discovered the largest of Saturn's satellites; the other four satellites of Saturn were all the discovery of Mr. Cassini, the third and fifth in the years 1671, 1672, and 1673; but the first and second were not discovered till the year 1684, by extraordinary telescopes of eighty, one hundred, one hundred and fifty, and two hundred feet in length.

* **SATURN**, one of the pagan deities, was the son of Caelus and Terra, and the father of Jupiter. He deposed and castrated his father, and obliged his brother Titan to resign the crown to him, on condition of his bringing up none of his male-issue, that the succession might at length devolve on him. For this purpose he devoured all the sons he had by his wife Rhea or Cybele; but she bringing forth at one time Jupiter and Juno, she presented the latter to her husband, and sent the boy to be nursed on mount Ida: when Saturn being informed of her having a son, demanded the child; but in his stead his wife gave him a stone swaddled

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swaddled up like an infant, which he instantly swallowed. Titan finding that Saturn had violated the contract he had made with him, put himself at the head of his children, and made war on his brother; and having made him and Cybele prisoners, confined them in Tartarus: but Jupiter being at length grown up, raised an army in Crete, went to the assistance of his father, defeated Titan, and restored Saturn to the throne. Some time after, Saturn being informed that Jupiter intended to dethrone him, endeavoured to prevent it; but the latter hearing of his intention, deposed his father, whom, by the advice of Prometheus, he bound in woollen fetters, made him suffer the punishment of castration he had inflicted on his father Cœlus, and threw him into Tartarus, with Iapetus his uncle: but escaping from thence, he fled into Italy, where he was kindly received by Janus, king of the country, who associated him to the government, whence Italy obtained the name of Saturnia Tellus, as also that of Latium, from *lateo*, to lie hid. There Saturn, by the wisdom and mildness of his government, is said to have produced the golden age. Saturn was represented as an old man, with a beard, but bald and bare-headed, holding in his right hand a sickle, scythe, or a key, and in his left a serpent biting its tail. To this deity human sacrifices were sometimes offered, and particularly by the Carthaginians. Among the Romans, his priests were clothed in red, and at his festivals gladiators were employed to kill each other. The abbé La Pluche has endeavoured to prove that Saturn is of Egyptian origin. The annual meeting of the judges in that country, he observes, was made known by setting up an image with a long beard, and a scythe in his hand, the first was an emblem of the age and gravity of the magistrates, and the last was to denote that the season of their assembling was just before the hay-harvest. To this figure they gave several names, as *Chrone*, from *keren*, splendor, which the Greeks changed to *Chronos*, one of the names of Saturn. They also called it *Seterin*, from *seterim*, judges; whence was derived the word Saturn. As this figure continued exposed till the beginning of the new solar year, Saturn was at length considered as the father of time; his scythe then was supposed to denote his cutting down all things, and the serpent the revolution of the year.

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SATURN, in chemistry, &c. an appellation given to lead. See *Lead*.

SATURN, in heraldry, denotes the black colour, in blazoning the arms of sovereign princes.

SATURNALIA, in Roman antiquity, a festival observed about the middle of December, in honour of the god Saturn.

On this festival the Romans sacrificed bare-headed, contrary to their custom at other sacrifices.

SATURNINE, an appellation given to persons of a melancholy disposition, as being supposed under the influence of the planet Saturn.

SATYR, in the heathen mythology, a fabulous kind of demi-god, or rural deity, of the ancient Romans, represented with goats feet, and sharp pricked-up ears. Some think the notion of these satyrs might have been derived from the monks known at present under the same name.

SATYRE, or SATIRE, in matters of literature, a discourse or poem exposing the vices and follies of mankind. The satyr of the Greeks differed from that of the Romans, as being a kind of interlude annexed to tragedy, with a view to remove from the audience too melancholy impressions. But satyr, as we now have it, is entirely Roman, if we may believe Quintilian, who says, *Satira quidem tota nostra est*; or Horace, who styles Ennius the inventor of a poem unknown to the Grecians, meaning satyr, according to the opinion of all his interpreters. Scaliger however expressly denies it to be of Roman original; and there is reason, indeed, as we shall see hereafter, to understand these expressions of Quintilian and Horace with some abatement. Those that will not allow it to be derived from the Grecians, but entirely Roman, maintain that satyr should be writ with an *i*, not a *y*; and that it is not derived from *satyrus*, but *satyr*: *satira* therefore is the same as *satura*, as *maximus* anciently *maximus*. When the Romans grew more polite, these kind of verses refined in proportion, but they retained still their jibes and banters, and kept so far to their first institution, as to make the follies of human life the object of their ridicule. From hence proceeded satyr, so called from the farrago and variety of matter it contained. It was improved likewise with music and dancing, which, considering its being carried on in dialogue, made it resemble somewhat of the dramatic

matic kind; nor had the Romans any thing that came so near the drama as this did. Afterwards, when they had received both tragedy and comedy from the Grecians, they were so taken with the novelty, that satyr for some time lay neglected: but coming again into esteem, it was added as a kind of exordium to comedy. Thus things went on for some years, till Ennius arose, endued with wit and true poetic fire, who observing how fond the people were of seeing the vices of mankind exposed upon the stage, thought a poem on the same subject, without the decoration of scenes and action, might have the same effect. Accordingly he attempted satyrs in the same form we now see them, only he did not confine himself to the hexameter, but made use of all sorts of measure. The remains we have of this poet are noble indications of the strength of his genius; and Horace and Virgil have shewn what opinion they had of his writings by borrowing so much from them. After Ennius succeeded Pacuvius; but his works are all lost, excepting some fragments, and those of uncertain authority. Next came Lucilius, of whom also we have some fragments remaining: but his excellencies and imperfections are very amply set forth by Horace, whose words we have no occasion to cite here. It must be allowed, however, that one species of satyr owes its perfection to Horace, as another does to Juvenal. A third kind was the Varronian or Menippean satyr, so called from Menippus, a cynic philosopher among the Grecians, whose doctrine Varro followed. It was a sort of medley, consisting of not only all kinds of verse, but of verse and prose mixed together; a specimen of which we have in Petronius's Satyricon. We have none of Varro's poetical works remaining, except some small fragments; which is the more to be lamented, considering the character Quintilian gives of him, that he was the most learned of all the Romans. The word satyr was anciently taken in a less restrained sense than it is at present, not only as denoting a severe poem against vice, but as consisting of precepts of virtue, and the praises of it: and even in the satyrs, as they are called, of Horace, Juvenal, and Persius, &c. which are principally levelled against the weakness, the follies, or vices of mankind, we find many directions, as well as incitements to virtue. Such strokes of morality Horace is full of; and in Juve-

nal they occur very frequently. All of them sometimes correct vice like moralists, we may say, like divines rather than satyrists. With respect to the nature and different species of it, satyr, in general, being a poem designed to reprove the follies and vices of mankind, is twofold, either the jocose, as that of Horace, or the serious, like that of Juvenal; the former hidden, the latter open: that generally makes sport with vice, and exposes it to ridicule; this probes it to the bottom, and puts it to the torture: and so far is it from not deserving the title of satyr, as some pretend, that it seems rather a more noble species of it; and the genteel strokes of Horace, how ingenious soever, are less affecting than the poetic rage and commendable zeal of Juvenal. They both agree in being pungent and cutting, yet are distinguished by very evident marks. The one is pleasant and facetious, the other angry and austere: the one smiles, the other storms: the follies of mankind are the object of one, their crimes are the object of the other: the former is always in the pleasing style, the latter generally in the sublime: that abounds with wit only, this adds to the salt bitterness and acrimony. Either kind of satire may be writ in the dialogue or epistolary manner; and we have instances of both forms in Horace, Juvenal, and Persius. As some of Horace's, which are called satyrs, are as truly epistles; so many of his epistles might as well be called satyrs: for example, *Qui fit Mecenas*, &c. might, with equal reason, be reckoned among the epistles; and *Prima diæa, mihi*, &c. among the discourses or satyrs.

The chief satyrists among the ancients are Horace, Juvenal, and Persius; those among the moderns, Regnier and Boileau in French; and Dryden, Oldham, Rochester, Buckingham, Pope, Young, Phillips, &c. among the English.

SAUCISSE, or SAUSAGE, in the military art, a long train of powder, sewed up in a roll of pitched cloth, about two inches in diameter, serving to set fire to mines. There are usually two saucisses extended from the chamber of the mine to the place where the engineer stands; that in case one should fail, the other may take effect.

SAUCISSON, in fortification, a mass of large branches of trees bound together, and differing only from a fascine, as this is composed of small branches of twigs.

SAVIN,

SAVIN, *Sabina*, in botany, a species of juniper, and famous as an hysteric and attenuant; and, indeed, it promotes the discharges by urine, and the menses more forcibly than safely, if not under very careful management.

SAVIOUR, an appellation peculiarly given to Jesus Christ, as being the true Messiah, and Saviour of the world.

Order of St. SAVIOUR, a religious order in the Romish church, founded by St. Bridget, about the year 1345; and so called from its being pretended that our Saviour himself dictated to the foundress its constitutions and rules.

SAUNDERSON, Dr. **NICHOLAS**, a celebrated professor of the mathematics in the university of Cambridge, was born in January 1682, at Thurleston, in Yorkshire, where his father had a small estate, and a place in the excise. When he was a year old the small-pox deprived him of his sight, and also of his eyes, which came away in the abscess, and hence he retained no more idea of light and colours than if he had been born blind. Yet being early sent to the free-school at Pennington, he there laid the foundation of that knowledge of the Greek and Latin tongues, which he afterwards improved so far, as to be able perfectly to understand the works of Archimedes, Euclid, and Diaphontus, when read to him in the original Greek. On his leaving the grammar-school, his father began to instruct him in arithmetic; and here his genius first appeared; he was soon capable of working the common questions, of making long calculations by the help of his memory, and of forming new rules to himself for the more readily solving of such problems as are frequently proposed to learners, rather to perplex than instruct. When eighteen years of age, he was introduced to the acquaintance of Richard West, of Underbank, Esq; This gentleman generously took the pains to instruct him in the principles of algebra and geometry; and soon after Dr. Nettleton took the same pains with him; and to these gentlemen he owed his introduction into the mathematical sciences; they instructed him by the sense of feeling, furnished him with books, and often read and expounded them to him; but he soon excelled his masters. His eagerness for learning growing with him, his father resolved to encourage it, and sent him to a private academy at Artercliff, near Sheffield: but logic and metaphysics, the principal

learning of that school, were not agreeable to his genius; he therefore made but a short stay. He now prosecuted his studies at home without a master. His father having a numerous family, at length grew uneasy at the charge of keeping him. His own inclinations led him to Cambridge; but the expence of an education there was a difficulty not to be surmounted. At last it was resolved that he should try his fortune there, but in a way very uncommon, not as a scholar, but as a master; for his friends observing that he was peculiarly happy in conveying his ideas to others, hoped he would teach the mathematics with credit even in the university. Accordingly Mr. Joshua Dunn, a fellow-commoner in Christ-college, brought him to Cambridge in 1707, when he was twenty-five years of age; and he resided in the college with his friend, without being admitted a member. The society, pleased with so extraordinary a guest, allotted him a chamber, and allowed him every privilege that could be of advantage to him. But he still laboured under many difficulties; he was young, and without a fortune, and though untaught himself, was to teach philosophy in an university where it reigned in the greatest perfection. The *Principia Mathematica*, *Optics*, and *Arithmetica Universalis* of Sir Isaac Newton, were the foundations of his lectures, and afforded him a noble field for the display of his genius; and great crowds came to hear a blind man speak lectures on optics, discourse on the nature of light and colours, explain the theory of vision, the effect of glasses, the phenomenon of the rainbow, and other objects of sight. This must appear extremely surprising; but if we consider that this science is altogether explained by lines, and is subject to the rules of geometry, it is not difficult to conceive that he might become a master of these subjects. As he instructed youth in the principles of the Newtonian philosophy, he soon became acquainted with its incomparable author, who had several years before left the university, and frequently conversed with him on the most difficult parts of his works: he also lived in friendship with the other eminent mathematicians of the age, Halley, Cotes, De Moivre, &c. Upon Mr. Whiston's removal from the professorship of the mathematics in the university of Cambridge, Mr. Saunderson's mathematical merit was so superior to that of any of his competitors, that

an extraordinary step was taken in his favour: in order to qualify him with a degree which the statutes require, the heads of colleges applied to the duke of Somerset, their chancellor, who procured a mandate from Queen Anne for conferring on him the degree of master of arts, and he was then chosen Lucasian professor of the mathematics in November 1711; when he began with an inauguration speech, in very elegant Latin, and a style truly Ciceronian. He continued at Christ's college till 1723, when he took a house in Cambridge, and soon after married a daughter of the reverend Mr. Dickens, rector of Boxworth in Cambridgeshire, by whom he had a son and a daughter. In 1728, when the university was honoured with a visit from George II. that prince was pleased to express his desire of seeing so remarkable a person; and accordingly Mr. Saunderson waited on his majesty in the senate-house, where, by the royal favour, he was created doctor of laws. Mr. Saunderson had great wit and vivacity in conversation, and was an excellent companion. He had a particular regard to truth, and was such an enemy to disguise, that he thought it his duty to speak his thoughts at all times with unrestrained freedom. Hence his sentiments on men and opinions; his friendship or disregard, were expressed without reserve: but this sincerity raised him many enemies. He at first acquired most of his ideas by the sense of feeling; and this, as is commonly the case with the blind, he enjoyed in great perfection. Yet he could not, as some are said to have done, distinguish colours by that sense; for after having made repeated trials, he used to say, it was pretending to impossibilities. But he could with great nicety and exactness observe the least degree of roughness or defect of polish in a surface. Thus, in a set of Roman medals, he distinguished the genuine from the false, though they had been counterfeited with such exactness as to deceive a connoisseur who had judged by the eye. By the sense of feeling, also, he distinguished the least variation in the atmosphere: and the author of his life says, that he has been seen in a garden, when observations have been making on the sun, to take notice of every cloud that interrupted the observation, almost as justly as they who could see it. He could also tell when any thing was held near his face, or when he passed by a tree at no great distance, provided the air was calm, merely

by the different impulse of the air on his face. * His ear was also equally exact; he could readily distinguish to the fifth part of a note: by the quickness of this sense he could judge of the size of a room, and of his distance from the wall; and if he ever walked over a pavement in courts, piazzas, &c. which reflected a sound, and was afterwards conducted thither again, he could exactly tell in what part of the walk he stood, merely by the note it sounded. He had naturally a healthy constitution, but too sedentary a life at length brought on a numbness in his limbs, which at last ended in the mortification of one of his feet, of which he died the 19th of April 1739, in the fifty-seventh year of his age.

* SAVOY, a sovereign duchy of Europe, situate between France and Italy, bounded on the north by the lake of Geneva; on the east by the Alps, which part it from Piedmont and Vallais; on the west by the river Rhone, which divides it from Bruges and Bresse; and on the south by Dauphiny, and part of Piedmont. It is 83 miles in length, and 68 in breadth. The air is cold on account of the high mountains, which are almost always covered with snow. But the soil is tolerably fertile, and supplies the inhabitants with the necessaries of life. They have indeed no superfluities, for they can spare nothing to their neighbours but chestnuts and turnips. Some of the mountains, which are covered with snow in the winter, yield good pasture in the summer, which feed a great number of cattle. There is plenty of game, and among the rest are stags, fallow-deer, roe-bucks, wild boars, bears, and marmots, white hares, and red or grey partridges, wood-hens, pheasants, and the like. There are several lakes which are full of fish. The principal rivers are the Isere, the Arche, and the Arva. The inhabitants are laborious, sober, good soldiers, and faithful subjects. The duke, their sovereign, is also king of Sardinia.

SAW, an instrument which serves to cut into pieces several solid matters, as wood, stone, ivory, &c. The best saws are of tempered steel ground bright and smooth; those of iron are only hammer-hardened: hence the first, besides their being stiffer, are likewise found smoother than the last. They are known to be well hammered by the stiff bending of the blade; and to be well and evenly ground, by their bending equally in a

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bow. The edge, in which are the teeth, is always thicker than the back, because the back is to follow the edge. The teeth are cut and sharpened with a triangular file, the blade of the saw being first fixed in a whetting block. After they have been filed the teeth are set, that is, turned out of the right line, that they may make the kerf or fissure the wider, that the back may follow the better. The teeth are always set ranker for coarse cheap stuff than for hard and fine, because the ranker the teeth are set the more stuff is lost in the kerf. The saws by which marble, and other stones are cut, have no teeth; these are generally very large, and are stretched out and held even by a frame. The workmen who make the greatest use of the saw, are the sawyers, carpenters, joiners, cabinet-makers, ebonists, stone-cutters, carvers, sculptors, &c. The lapidaries too have their saw, as well as the workers in mosaic; but these bear little resemblance to the common-saw. But of all mechanics, none have so many saws as the joiners; the chief are as follow; the pit-saw, which is a large two-handed saw, used to saw timber in pits; this is chiefly used by the sawyers. The whip-saw, which is also two handed, used in sawing such large pieces of stuff as the hand-saw will not easily reach. The hand-saw, which is made for a single man's use, of which there are various kinds; as the bow or frame-saw, which is furnished with cheeks: by the twisted cords which pass from the upper parts of these cheeks and the tongue in the middle of them, the upper ends are drawn closer together, and the lower set further apart. The tenon-saw, which being very thin, has a back to keep it from bending. The compass saw, which is very small, and its teeth usually not set: its use is to cut a round, or any other compass-kerf; hence the edge is made broad and the back thin, that it may have a compass to turn in. The surgeons also use a saw to cut off bones; this should be very small and light, in order to be managed with the greater ease and freedom, the blade exceeding fine, and the teeth exquisitely sharpened, to make its way more gently, and yet with great expedition, in cutting off legs, arms, &c.

SAW-FISH, in ichthyology, a species of *squalus*, with the rostrum very long, flat, and denticled on both sides. It is one of the most singular animals of the fish kind, and grows to a considerable size, being often more than twelve feet

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in length, including the rostrum, and very thick in proportion: the head is large, and terminates in a bony rostrum, three or four feet, or more, in length, and furnished all along, on both sides, with very long, robust, and sharp teeth, or denticulations.

* **SAXE**, Maurice, count De, marshal-general of the camps and forces of France, one of the greatest generals of the 18th century, was born at Dresden, the 9th of December, 1696. He was the natural son of Frederic Augustus II. elector of Saxony, king of Poland, and grand duke of Lithuania, and the countess Aurora of Koningsmarc. At his leaving the cradle, he was delighted with the noise of drums and trumpets; in proportion as he advanced in years, he ran with extreme eagerness to see the troops exercised; and, at his return to his apartment, sent for children of his own age, with whom he imitated in miniature, what he had seen executed at large. He would not hear study or Latin mentioned; but horses and fencing took up all his thoughts. His preceptor had even the greatest difficulty in the world to make him learn to read and write, and there was no other way of making him study in the morning, but promising that he should ride in the afternoon. The count de Saxe at length followed the elector in all his military expeditions. At 12 years of age, he was at the siege of Lille, in the character of adjutant-general to the count of Schullenberg, general of the Saxon troops, and several times mounted the trenches both of the city and citadel, under the eye of the king his father, who admired his intrepidity, of which he gave equal proofs the following year, where he was twice in danger of being slain. On the 11th of September, 1709, he performed prodigies of valour at the bloody battle of Malplaquet. The campaign of 1710 was not less glorious with respect to him; for the duke of Marlborough and prince Eugene publicly applauded him. In 1711, he followed the king of Poland to Strasburg, where he swam across a river, within sight of the enemy, with a pistol in his hand, and during his passage saw three officers, and above twenty soldiers, fall by his side, without seeming moved at his danger. At his return to Dresden, the king made him raise a regiment of horse, on which he spent the winter in teaching that regiment some new evolutions he had invented, and the next year led them against the Swedes. On the

20th of December, 1712, he was present at the bloody battle of Gadelbusch, where his regiment, with which he thrice charged the enemy, suffered greatly. After that campaign, he married Victoria, the young countess of Loben, a very amiable lady with a great fortune; but after having one son by her, who died young, he had his marriage dissolved in 1711. He continued to distinguish himself in the war against the Swedes, and, in December, 1715, was at the siege of Stralsund, which was defended by Charles XII. in person, when the desire of seeing that hero made him expose himself, by being one of the first in all attacks, till having taken an horn-work, he had the satisfaction he wanted. He afterwards served in a campaign in Hungary, under prince Eugene, against the Turks; and, at his return to Poland, in 1718, the king made him a knight of the White Eagle. In 1720, he went to France, where the duke of Orleans, regent of the kingdom, made him marshal of the camp; and having obtained the consent of his Polish majesty for his serving in France, he purchased, in 1722, a German regiment, which has since borne his name. To this regiment he taught a new exercise; and the count de Saxe, during his residence in France, learned fortification and mathematics, till prince Ferdinand, duke of Courland, falling dangerously ill, he resolved to endeavour to obtain the sovereignty of that duchy. For this purpose he went to Mittau, where he was received with open arms by the states, and had afterwards several private interviews with the duchess dowager, who falling in love with him, made use of all her interest to promote his design; and on the 5th of July, 1726, the count de Saxe was unanimously elected to succeed duke Ferdinand in the duchy of Courland and Semigalia. The duchess dowager was Anna Iwanowna, the second daughter of the czar Iwan Alexiowitz, the brother of Peter the Great; and this princess so warmly espoused his interest, that the Moscovites and Poles opposing his election, she herself went to Riga and Peterburg, where she redoubled her solicitations in favour of his election; and there is no doubt but he might have shared with her the throne of Moscovy, to which she was afterwards raised, had not their marriage been broken off by an intrigue which was discovered between him and one of her women. From that in-

stant, the count de Saxe's affairs declined; and in 1729, he was obliged to return to Paris. It is remarkable, that the count, while in Courland, writing to France for a supply of men and money, made-moiselle Le Couvreur, a celebrated actress, pledged her jewels and plate, and sent him the sum of forty thousand livres. The count de Saxe, at his return to Paris, applied himself again to the study of mathematics and to mechanics. In 1732, he refused the command of the Polish army offered him by the king his brother, and distinguished himself on the Rhine, under the command of the duke of Berwick, particularly at the lines of Etlingen, and the siege of Philippsburg, after which he was made lieutenant-general. A war being kindled on the death of the emperor Charles VI. the count de Saxe took the city of Prague by storm, on the 26th of November, 1741; and afterwards Egra and Elebogen. He at length raised a regiment of Ulanes, brought back the marshal de Broglie's army to the Rhine, and made himself master of the lines of Lauterburg. He was made marshal of France, on the 26th of March, 1744, and was commander in chief of the army in Flanders, when, by his vigilance, he reduced the army of the allies to a state of inaction. On the 11th of May, 1745, he gained the battle of Fontenoy, and followed that victory by taking Tournay, Ghent, Bruges, Oudenard, Ostend, Aeth, &c. and when the campaign was thought to be concluded, took Brussels, on the 18th of February, 1746. In the next campaign, he gained the battle of Roucoux. The French king rewarded his success on the 12th of January, 1747, by making him marshal general of his camps and forces. The Dutch now trembled, and on the 3th of May following, created prince William of Nassau stadtholder; but the marshal de Saxe marched into Zealand, and gained the battle of Lawfeldt, on the 2d of July following; he approved the siege of Bergen-op-Zoom, which was taken by M. de Lowendahl, and made himself master of the city of Maastricht, on the 7th of May, 1748. This great success was followed by a peace, concluded at Aix-la-Chapelle, the 18th of October following. The marshal de Saxe afterwards resided at Chambord, an estate given him by the French king; and some time after went to Berlin, where he was magnificently received by the king of Prussia, who spent several nights in con-

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versing with him. At last, in the midst of wealth and honour, and in the enjoyment of the highest reputation, he died, at Chambord, after an illness of nine days, on the 30th of November, 1750, aged 54. Being educated in the Lutheran religion, and dying of the same persuasion, the clergy of France refused to allow him christian burial, on which his body was carried to Strasburg, and deposited in the new church dedicated to St. Thomas.

SAXIFRAGE, in botany, a genus of plants, with a rosaceous flower, consisting of five plane ovated petals: the fruit is an unilocular capsule, of an oval form, containing a great many seeds. The tuberosities at the root of the white flowered saxifrage are kept in the shops under the name of saxifrage seeds: they are diuretic and attenuant; and therefore good in nephritic cases and obstructions of the menses and viscera: some also recommend them in the jaundice and dropsy.

* **SAXONY**, a very large country of Germany, divided into three parts, namely, the circle of Upper Saxony, the circle of Lower Saxony, and the duchy of Saxony. The circle of Upper Saxony contains several territories, governed by particular princes, and is bounded on the E. by Prussia, and a part of Poland and Silesia, on the S. by Bavaria, Bohemia, and the circle of Franconia, on the W. by the circle of the Upper Rhine and that of Lower Saxony, on the N. by the Baltic sea, and the circle of Lower Saxony. The elector of Saxony is the director. It comprehends the electoral circle of Saxony, the principality of Anhalt, the landgrate of Thuringia, the margravate of Misnia, the marche of Brandenburg, and the duchy of Pomerania, and these again are subdivided into many lesser districts. The circle of Lower Saxony is bounded on the N. by the Baltic sea and the duchy of Sleswick, on the W. by the German Ocean and the circle of Westphalia, on the S. by the circle of the Upper Rhine, and the circle of Upper Saxony, which also bounds it on the E. The directors of this circle are the dukes of Magdeburg, Bremen, and of Brunswick-Lunenbourg. It comprehends the archbishopric of Magdeburg, the bishopric of Hildesheim, the archbishopric of Bremen, the bishopric of Halberstadt, the bishopric of Schwerin, the bishopric of Ratzeburg, the bishopric of

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Lubeck, and the bishopric of Sleswick. All which have been secularized, except Lubeck and Hildesheim. The other territories are the duchies of Brunswick-Lunenbourg, Lawenburg, and Mecklenburg; the principality of Verden, the counties of Reinsteim, and Blanburg, as also the free cities of Hamburg, Lubeck, Colmar, Mulhausen, and North-hausen, which see in their proper places. The duchy of Saxony is bounded on the N. by the margravate of Brandenburg, on the E. by Lower Lusatia, on the S. by Misnia, and on the W. by the principality of Anhalt. It is 75 miles in length, and 62 in breadth, and is a very fertile and trading country, abounding in mines. It is cut into two unequal parts by the river Elb. This is commonly called the electoral circle of Saxony, and Wirtemberg is the capital.

SAY or **SAYE**, in commerce, a kind of serge, or woollen-stuff, much used abroad for linings, and by the religious for shirts: with us it is used for aprons by several sorts of artificers, being usually dyed green.

SCABIOUS, in botany, a plant with a flosculous flower, each floscule being monopetalous and tubular, and slightly divided into four or five segments at the limb: there is no pericarpium; the seeds, which are single after each floscule, being crowned with their proper cups, and contained in the common receptacle.

The leaves of scabious stand recommended as aperient, sudorific, and expectorant; but the present practice has little dependence on these virtues.

SCAFFOLD, among builders, an assemblage of planks and boards, sustained by tressels and pieces of wood fixed in the wall; whereon masons, bricklayers, &c. stand to work in building high walls, &c. and plasterers, in plastering ceilings, &c.

Scaffold also denotes a timber-work raised in the manner of an amphitheatre, for the more commodious viewing any show or ceremony: it is also used for a little stage, raised in some public place whereon to behead criminals.

SCALA, in anatomy, a name given to two canals in the cochlea of the ear.

SCALA, in architecture, the same with stair-case.

SCALADO, or **SCALADE**, in the art of war, a furious assault made on the wall or rampart of a city, or other fortified place, by means of ladders, without

carrying on works in form to secure the men.

SCALE, a mathematical instrument, consisting of several lines drawn on wood, brass, silver, &c. and variously divided, according to the purposes it is intended to serve; whence it acquires various denominations, as the plain-scale, diagonal-scale, plotting-scale, Gunter's-scale, &c.

Construction and use of the Plain-SCALE.

The plain-scale is an instrument much used in navigation, &c. for solving the several cases of sailing. See *Navigation*.

SCALE, *Scala*, in music, a denomination given to the arrangement of the six syllables invented by Guido Aretine, *ut, re, mi, fa, sol, la*, called also gammut. See *Gammut*.

It bears the name scale (i. e. ladder) because it represents a kind of ladder, by means whereof, the voice rises to acute, or descends to grave; each of six syllables being, as it were, one step of the ladder. Scale is also used for a series of sounds rising or falling towards acuteness or gravity, from any given pitch of tune, to the greatest distance that is fit or practicable, through such intermediate degrees as make the succession most agreeable and perfect, and in which we have all the harmonical intervals most commodiously divided. See *Interval*.

This scale is otherwise called an universal system, as including all the particular systems belonging to music. See *System*.

Origin and Construction of the SCALE of Music. Every concord or harmonical interval is resolvable into a certain number of degrees or parts; the octave, for instance, into three great tones, two less tones, and two semi-tones; the greater sixth into two greater tones, one less tone, and two semi-tones; the fifth into two greater tones, one less tone, and one semi-tone; the fourth into one greater tone, one less tone, and one semi-tone; the greater third into one greater tone, and one less tone; and the lesser third into one greater tone and one less tone.

It is true, there are variety of other intervals or degrees, besides greater tones, less tones, and semi-tones, into which the concords may be divided; but these three are preferred to all the rest, and these three alone are in use. Farther, it is not any order or progression of these degrees that will produce melody; a number, for instance, of greater tones,

will make no music, because no number of them is equal to any concord, and the same is true of the other degrees; there is a necessity therefore, of mixing the degrees to make music, and the mixture must be such, as that no two of the same kind be ever next each other. See *Concord*.

A natural and agreeable order of these degrees, Mr. Malcolm gives us in the following division of the interval of an octave, wherein (as all the lesser concords are contained in the greater) the divisions of all the other simple concords are contained. Under the series are the degrees between each term, and the next. In the first series, the progression is by the less third; in the latter, by the greater third.

Great 2d. gr. 3d. 4th. 5th. 6th. 7th. 8th.

1	2	3	4	5	6	7	8
Key	1 st great	2 nd great	3 rd great	4 th great	5 th great	6 th great	7 th great
of	tone.	tone.	tone.	tone.	tone.	tone.	tone.
fund.	less	less	less	less	less	less	less

Great 1d.

1	2	3	4	5	6	7	8
Key	1 st great	2 nd great	3 rd great	4 th great	5 th great	6 th great	7 th great
of	tone.	tone.	tone.	tone.	tone.	tone.	tone.
fund.	less	less	less	less	less	less	less

Now the system of octave containing all the original concord, and the compound concords being only the sums of the octave and some less concord; it is evident that, if we would have the series of degrees continued beyond an octave, there to be continued in the same order through a second as through the first octave; and so on through a third and a fourth octave, &c. and such a series is what we call the scale of music.

Of this there are two different species according as the less or greater third, or the less or greater sixth are taken in; for both can never stand together in relation to the same key or fundamental, so as to make an harmonical scale. But, if by either of these ways, we ascend from a fundamental or given sound to an octave, the succession will be melodious, though the two make two different species of melody. Indeed, every note is discerned with regard to the next; but each of them is concord to the fundamental, except the second and seventh. In continuing the series there are two ways of compounding the names of the simple interval with the octave; thus a greater or lesser tone, or semi-tone, above an octave, or two octaves,

taves, &c. or to call them by the number of degrees from the fundamental, as ninth, tenth, &c.

In the two scales above, the several terms of the scale are expressed, by the proportionable sections of a line represented by 1. the key or fundamental of the series. If we would have the series expressed in whole numbers, they will stand as follows, in each whereof the greatest number expresses the longest chord, and the other numbers the rest in order; so that, if any number of chords be in these proportions of length, they will express the true degrees and intervals of the scale of music, as contained in an octave concinnously divided in the two different species above-mentioned.

540 : 480 : 432 : 405 : 360 : 324 : 288 : 270
great less great less great less semi-
tone tone tone tone tone tone tone

216 : 192 : 180 : 162 : 144 : 135 : 120 : 108
great less great less great less semi-
tone tone tone tone tone tone tone

This scale the antients called the diatonic scale, because proceeding by tones and semi-tones.

The moderns call it simply the scale, as being the only one now in use; and sometimes the natural scale, because its degrees and their order are the most agreeable and concinnous, and preferable by the consent both of sense and reason, to all other directions ever instituted. Those others are the chromatic and enharmonic scales, which, with the diatonic, made the three scales or genera of melody of the antients.

The design of the scale of music is to shew how a voice may rise and fall less than any harmonical interval, and thereby move from one extreme of any interval, to the other, in the most agreeable succession of sounds. The scale, therefore, is a system exhibiting the whole principles of music; which are either harmonical intervals (commonly called concords) or concinnous intervals. The first are the essential principles, the other subservient to them, to make the greater variety.

Accordingly, in the scale we have all the concords with their concinnous degrees, so placed as to make the most perfect succession of sounds from any given fundamental or key, which is supposed to be represented by 1. It is not to be sup-

posed that the voice is never to move up and down by any other immediate distances than those of the concinnous degrees; for though that be the most usual movement, yet, to move by harmonical distances, as concords, at once, is not excluded, but is even absolutely necessary. In effect, the degrees were only invented for variety's sake, and that we might not always move up and down by harmonic intervals, though those are the most perfect, the others deriving all their agreeableness from their subserviency to them.

Add, that besides the harmonical and concinnous intervals, which are the immediate principles of music, and are directly applied in practice; there are other discord relations which happen unavoidably in music in a kind of accidental and indirect manner; for, in the succession of the several notes of the scale, there are to be considered, not only the relations of these that succeed others immediately, but also of those betwixt which other notes intervene. Now the immediate succession may be conducted so as to produce good melody, and yet among the distant notes there may be very gross discords that would not be allowed in immediate succession, much less in consonance. Thus, in the first series or scale above delivered, though the progression be melodious, as the terms refer to one common fundamental, yet are there several discords among the mutual relations of the terms; e. gr. from 4th to 7th is 32 : 45, and from the greater 2d to the greater 6th is 27 : 40, and from the greater 2d to 4th is 27 : 32, which are all discords; and the same will happen in the second series.

SCALE, in geography and architecture, a line divided into equal parts, placed at the bottom of a map, or plan, to serve as a common measure for all the parts of the building, or all the distances and places of the map.

SCALENE, or SCALENOUS TRIANGLE, in geometry, a triangle whose sides and angles are unequal.

SCALenus, in anatomy, a name given to one of the flexors of the neck. This muscle has its origin from the first, second, and sometimes the third rib; and is inserted into the apophyses of the vertebrae of the neck, and is by some justly referred to the number of the elevators of the thorax. The scalenus is frequently divided into three parts; hence some

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some anatomical writers have made three muscles of it under the names of the first, the second, and the third scalenus.

SCALPEL, in surgery, a kind of knife used in anatomical dissections and operations in surgery.

SCALPER, or **SCALPING-IRON**, a surgeon's instrument used for scraping foul carious bones.

SCAMMONY, in the materia medica, a concreted vegetable juice of a plant of the same name, partly of the resin and partly of the gum-kind, of which there are two sorts, distinguished by the names of the places from whence they are brought.

The chemical writers have given us many preparations of scammony, among which are a tincture and a resin; but the scammony in substance is preferable to either; for they both irritate more, and yet purge less; the resin itself given in an equal dose with the crude scammony, will give fewer stools, and those attended with worse gripings. The ancients used scammony externally for cutaneous eruptions, and to soften hard tumours; but at present it is used only as a purge.

SCANDALUM MAGNATUM, in law, a defamatory speech or writing to the injury of a person of dignity; for which a writ that bears the same name is granted for the recovery of damages. By statute, no person is either by writing or speaking to publish any false or scandalous news of any lord, prelate, officer of the government, judge, &c. on pain of imprisonment, till he produce his author; and if the same be published in a libel, the publisher is indictable, and may be fined and imprisoned.

SCANNING, in poetry, the measuring of a verse by feet, in order to see whether or no the quantities be duly observed.

SCANTLING, in ship-building, is the breadth and thickness of a piece of timber.

SCAPE-GOAT, in Jewish antiquity, the goat which was set at liberty on the great day of expiation. See *Expiation*.

SCAPULA, in anatomy, the shoulder-blade, a triangular bone, situated on the outside of the ribs, and commonly extended from the second to the seventh rib; its superior posterior angle, when it is in the least straining position, being about three inches from the spinal processes of the vertebrae, while the long side between that angle and the inferior one is stretched obliquely forward as it descends, having nothing between it and the ribs

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except the thin extremities of some muscles; but as the scapula advances forwards to its articulation with the arm-bone, its distance from the ribs increases. The uses of the scapula are to sustain the arms, and join them to the body, to serve for the insertion of several muscles, and to add somewhat to the necessary defence of the parts contained within the thorax.

SCAPULAR, in anatomy, a name given to two pair of arteries and as many veins. The arteries are the external scapular artery, which is sent from the subclavians to the external parts of the scapula, and the internal scapular artery, which arises from the axillary arteries, and goes to the parts that lie under the scapula. The scapular veins, which are also external and internal, arise in like manner from the subclavians.

SCAPULAR, or **SCAPULARY**, a part of the habit of several religious orders in the church of Rome, worn over the gown; as a badge of peculiar veneration for the Blessed Virgin. It consists of two narrow breadths or slips of cloth, covering the back and breast, and hanging down to the feet.

SCAPUS, in architecture, the fust or shaft of a column.

In botany the same word is used for the strait stalk or stem of a plant, standing upright like a pillar or column.

SCAR, or **ESCHAR**, the seam or mark of a wound after it is healed.

SCARABÆUS, the **BEEBLE**, in zoology, a numerous genus of insects, of the coleoptera order: the antennae of the beetles are of a clavated figure, and fissile longitudinally; and their eggs all hatch into hexapode worms, from which the young beetles are afterwards produced.

SCARIFICATION, in surgery, the operation of making several incisions in the skin by means of lancets, or other instruments, particularly the cupping-instrument. See *Cupping*.

With regard to the usefulness of scarification, Heister observes, that as much and as thick blood may be discharged this way as by phlebotomy, and that of consequence it must be equally beneficial in all disorders which require bleeding. Besides, scarification is highly necessary in violent inflammations, incipient or confirmed mortification, pestilential carbuncles, and the like, in order to discharge the stagnant and vitiated blood, by making many small wounds or incisions with a scalpel or lancet. Heister also thinks scarification of the gums, in the tooth-
ach,

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ach, may not unfrequently be very useful; as of the eyes in many disorders, if performed with caution.

SCARLET, a beautiful bright red. In painting in water colours, minium mixed with a little vermilion produces a good scarlet: but if a flower in a pint is to be painted of a scarlet colour, the lights as well as the shades should be covered with minium, and the shaded parts finished with carmine, which will produce an admirable scarlet. To dye cloth, stuff, &c. a scarlet, let the stuffs be alumed, as for crimson, in river-water; boil them for two hours, then hang them out a whole night without rinsing; but in the morning rinse them out. Then, in order to dye them, take clean bran-water clean skimmed, and for every pound of goods put in an ounce of pulverized tartar; having first mixed one half of it with half an ounce of cochineal, and when the liquor where the remaining half of the tartar is has boiled, then put in the cochineal, &c. Boil them together, afterwards add half an ounce of aqua fortis, in which a small quantity of sal ammoniac (not bigger than a pea) has been dissolved; which must be put in when the stuffs have boiled about a quarter of an hour; then boil them together for a little while, let the liquor cool, and rinse out the stuffs. To dye a scarlet in grain, take stale clear wheat-bran liquor, a sufficient quantity; alum, three pounds; enter twenty yards of broad-cloth, and boil it three hours; cool and wash it; take fair water, a sufficient quantity;adder or strawel, a fit quantity; boil them well; cool them with a little water, enter your cloth and make a bright yellow; cool and wash it again; take fresh wheat-bran-liquor, a sufficient quantity; madder, four pounds; enter your cloth at a good heat; handle it to a boiling, cool and wash it well: take more fresh bran-liquor; cochineal in fine powder, five ounces; and tartar, three ounces; enter your cloth, and boil an hour or more, keeping it under the liquor, then cool and wash it.

SCARLET-FEVER, the same with miliary fever.

SCARP, in fortification, the interior talus, or slope of the ditch next the place, at the foot of the rampart.

SCARP, in heraldry, the scarf which military commanders wear for ornament.

SCAVAGE, a toll or custom anti-ly exacted by mayors, sheriffs and bailiffs

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of cities and towns corporate, and of merchant-strangers, for wares exposed and offered to sale within their liberties; which was prohibited by 12 Hen. VII. but the city of London still retains this custom.

SCENE, *Scena*, in its primary sense, denoted a theatre, or the place where dramatic pieces, and other public shews were exhibited; for it does not appear that the ancient poets were at all acquainted with the modern way of changing the scenes in the different parts of the play, in order to raise the idea of the persons represented by the actors being in different places. The original scene for acting of plays was as simple as the representations themselves; it consisted on'y of a plain plot of ground proper for the occasion, which was in some degree shaded by the neighbouring trees, whose branches were made to meet together, and their vacancies supplied with boards, sticks, and the like; and to complete the shelter, these were sometimes covered with skins, and sometimes with only the branches of other trees newly cut down, and full of leaves. Afterwards more artificial scenery or scenical representations were introduced, and paintings used instead of the objects themselves. Scenes were then of three sorts, tragic, comic, and satyric. The tragic scene represented stately magnificent edifices, with decorations of pillars, statues, and other things suitable to the palaces of kings: the comic exhibited private houses with balconies and windows, in imitation of common buildings: and the satyric was the representation of groves, mountains, dens, and other appearances; and these decorations either turned on pivots, or slid along grooves, as those in our theatres. To keep close to nature and probability, the scene should never be shifted from place to place in the course of the play: the ancients were pretty severe in this respect, particularly Terence, in some of whose plays the scene never shifts at all, but the whole is transacted at the door of some old man's house, whither, with inimitable art, he occasionally brings the actors. The French are pretty strict with respect to this rule; but the English pay very little regard to it. Scene is also a part or division of a dramatic poem. Thus plays are divided into acts, and acts are again sub-divided into scenes; in which sense the scene is properly the persons present at, or concerned in the action on the stage at such a time: whenever, therefore, a new actor appears,

or an old one disappears, the action is changed into other hands; and therefore a new scene then commences. It is one of the laws of the stage, that the scenes be well connected; that is, that one succeed another, in such a manner as that the stage be never quite empty till the end of the act.

SCENIC GAMES, among the ancients, were entertainments exhibited on the *scenae frons* or theatre, including plays, dancing, and other theatrical performances.

SCENOGRAPHY, in perspective, the representation of a body on a perspective plane; or a description, thereof in all its dimensions, such as it appears to the eye. The *icnography* of a building, &c. represents its plan, or ground-work; the *orthography*, is a view of the front, or one of its sides; and the *scenography*, is a view of the whole building, front, sides, height, and all, raised on the geometrical plan. To exhibit the *scenography* of any body, 1. Lay down the basis, ground-plot, or plan of the body, according to the method taught under the article *Perspective*. 2. Upon the several points of the plan, raise the perspective heights: thus will the *scenography* of the body be completed, excepting that a proper shade is to be added.

SCEPTER, a kind of royal staff, or battoon, borne by kings, on solemn occasions, as an ensign of command and authority.

SCEPTER, in astronomy, one of the six new constellations of the southern hemisphere, consisting of seventeen stars.

SCEPTICISM, the doctrines and opinions of the Sceptics, whose distinguishing tenet was, that all things are uncertain and incomprehensible; and that the mind is never to assent to any thing, but to remain in perpetual doubt and suspense.

SCHEAT, or **SEAT**, a fixed star of the second magnitude, in the juncture of the leg with the left shoulder of Pegasus.

SCHEUCHZERIA, in botany, a genus of plants, having no corolla; the fruit consists of three roundish compressed inflated bivalve reflexo-distant capsules; the seed is single and oblong; there is sometimes six germina, and as many capsules, but three is the more natural and usual number.

SCHISM, a separation, or breaking off from communion with any church; on account of some disagreement in matters of faith or discipline. The Romanists reckon thirty-four schisms in their church, and bestow the name English schism on

the Reformation in this kingdom. Those of the church of England, again, apply the term schism to the separation of the nonconformists, viz. the Presbyterians, Independants, Quakers, &c. who contend for a further reformation.

SCHOLASTIC, σχολαστικος, something belonging to the schools. Scholastic was a long time a title of honour, at first only given to such as distinguished themselves by their eloquence in declaiming, &c. After Nero, this appellation was bestowed upon advocates, and afterwards it became restrained to such as had the government of ecclesiastical schools; established under the first race of French kings, who instructed the clerks of the church first in the humanities, then in theology and the liturgy. Among the Greeks, this was the name of an office or dignity answering to our divine or theologues.

Scholastic divinity is that part or species of divinity which clears and discusses questions by reason and arguments, in which sense it stands, in some measure, opposed to positive divinity, which is founded on the authority of fathers, councils, &c. The school-divinity is now fallen into the lowest contempt, and is scarce regarded any where, but in some of the universities, where they are still by their charters obliged to teach it.

SCHOLIAST, or **COMMENTATOR**, a grammarian, who writes scholia, that is, notes, glosses, &c. upon ancient authors, who have written in the learned languages.

SCHOLIUM, a note, annotation, or remark, occasionally made on some passage, proposition, or the like. This term is much used in geometry, and other parts of mathematics, where, after demonstrating a proposition, it is customary to point out how it might be done some other way, or to give some advice, or precaution, in order to prevent mistakes, or add some particular use, or application thereof.

SCHOOL, a public place, wherein the languages, humanities, or other arts and sciences are taught. Thus we say, grammar-school, writing school, &c.

SCHOONER, in navigation, a vessel navigated with two masts, and two large boom-sails on the main and fore-masts, besides the usual small-sails. They are generally built very light, as being principally intended for swiftness, and to sail in seas which are seldom frequented with stormy weather; such are the latitudes between or near the tropics.

SCHWALBEA, in botany, a genus of plants, the corolla whereof consists of a ringent single petal, the tube is of the length of the cup, the limb is erect, the superior lip is erect, concave, and quite entire, the lower one is trifid and obtuse; the fruit is either a bilocular capsule, or there is no pericarpium; the seed is single, roundish, and small.

SCIÆNA, in ichthyology, a genus of fishes; the whole head and covering of the gills are scaly, and one of the laminae of these coverings serrated at the edges; the body is compressed and broad, the back is acute, there are teeth in the jaws and fauces, the palate and tongue are smooth; there is only one fin on the back, which is divided in the middle to the very base; the tail is equal at the extremity; this genus comprehends the umbra and the umbrino.

SCIARRI, in natural history, the matter which runs down in burning torrents from the craters of volcanos, and which probably contains mineral and metallic particles, it being pondereous and hard.

Some of the sciarrs are coarse, and others fine and polished on the surface; some of them are black, others grey, others reddish, and others of the colour of iron; and many of them have coverings of pure sulphur over their whole surface. They seem to be the result of many sorts of minerals melted together.

SCIATICA, the HIP-GOUT, a violent and obstinate pain in the hip, chiefly in the joint, where the head of the thigh-bone is received into the acetabulum of the coxendix.

SCIENCE, in philosophy, denotes any doctrine, deduced from self-evident and certain principles; by a regular demonstration. Science may be properly divided as follows: 1. The knowledge of things, their constitutions, properties, and operations; this, in a little more enlarged sense of the word, may be called *physics*, or natural philosophy; the end of which is speculative truth.

2. The skill of rightly applying these powers; the most considerable under this head is *ethics*, which is the seeking out those rules and measures of human actions that lead to happiness, and the means to practise them; and the next is *mechanics*, or the application of the powers of natural agents to the uses of life.

3. The doctrine of signs, the most usual of which being words, it is aptly enough termed *logic*.

This, says Mr. Locke, seems to be the

most general, as well as natural, division of the objects of our understanding. For a man can employ his thoughts about nothing, but either the contemplation of things themselves for the discovery of truth; or about the things in his own power, which are his actions, for the attainment of his own ends; or the signs the mind makes use of, both in the one and the other, and the right ordering of them for its clearer information.

All which three, viz. things, as they are in themselves knowable; actions, as they depend on us in order to happiness; and the right use of signs, in order to knowledge, being *totò caelo*, different, they seem to be the three great provinces of the intellectual world, wholly separate and distinct one from another.

SCIENTIFIC, or **SCIENTIFIC**, something relating to the pure, sublimer sciences; or, that abounds in science or knowledge.

SCILLA, **SQUILL**, or **SEA-ONION**, a plant, with a large bulbous onion-like root: from which rise, first, a naked stalk, bearing several hexapetalous white flowers, and afterwards large green lily-like leaves, with a remarkable rib in the middle of each. It grows spontaneously on sandy shores in Spain and in the Levant, from whence we are annually supplied with the roots. They should be chosen large, plump, fresh, and full of a clammy juice: some are of a reddish colour, and others white, but no difference is observed in the qualities of the two sorts, and hence the college allows both to be taken promiscuously. This root is to the taste very nauseous, intensely bitter, and acrimonious; much handled, it exulcerates the skin. Taken internally, it acts as a powerful attenuant and aperient: in doses of a few grains it promotes expectoration and urine; in somewhat larger ones, it proves emetic and sometimes purgative. It is one of the most certain diuretics in hydropic cases, and expectorants in asthmatic ones, where the lungs or stomach are oppressed by tenacious phlegm, or injured by the imprudent use of opiates. The college of London directs an acetous tincture to be prepared, by macerating a pound of the dry roots in six pints of vinegar, with a gentle heat: to the liquor, pressed out, and after settling, poured off from the feces, one twelfth its quantity of proof spirit is added, to prevent its soon growing seculent. The college of Edinburgh orders fresh squills, cut in thin slices, to be taken in

the same quantity as the dry in the above prescription, and the maceration to be continued, in the sun's heat, for forty days: A scillitic oxymel is obtained by boiling a quart of the acetous tincture with three or four pounds of clarified honey, till the mixture acquires the consistence of a syrup. These preparations are used, as expectorants, in doses of one, two, or three drams, along with cinnamon or some other grateful water: where the first passages are overloaded with viscid phlegm, an ounce or more is given at once, to procure a more speedy and effectual evacuation by vomit.

SCILLY, a cluster of islands and rocks, lying about 30 miles to the west of Cornwall. The largest is called St. Mary's, and is the best cultivated, as well as the most populous. There are about 1000 inhabitants in all these islands. The air in general is pretty healthy, though sea-fogs are more frequent here than in larger tracts of land. They have several good harbours, where small ships may ride safely; but some of the rocks are very dangerous, as they are hid under water, and have been fatal to many ships of our own nation, particularly admiral Sir Cloudesly Shovel, with three other men of war, were cast away here, the 22d of October, 1707; and there were 1000 people on board the admiral, several of them gentlemen of quality, both of Spain and England.

SCIOPTIC, a sphere, or globe of wood, with a circular hole or perforation, wherein a lens is placed. It is so fitted, that, like the eye of an animal, it may be turned round every way, to be used in making experiments of the darkened room.

SCIRE-FACIAS, in law, a judicial writ most commonly issued to call a person to shew cause to the court whence it issues, why execution of a judgment passed should not be made out; as where a plaintiff has recovered debt or damages in a court of record, and does not take out execution in a year and a day after judgment recovered; in that case, he shall have this writ to summon the defendant to shew cause why execution should not be had against him upon the said judgment; which, if the defendant does not, judgment is given, and the plaintiff shall have execution. Where a plaintiff or defendant dies, execution may not be sued out on a judgment till the writ of scire-facias is brought, and judgment given thereupon. A scire-facias must likewise

issue where judgment is recovered against a femme sole who marries within the year and day, to summon the husband to shew cause, &c. And when a judgment is obtained against a testator, a scire-facias issues against the executor, though within a year after the judgment is had; and also against an administrator to an intestate.

SCIRRHUS, in surgery, a hard tumour without pain, though not absolutely without sensation.

SCIRRHUS HEPATIS, in medicine, a disease consisting in an indurated tumour of the liver, occasioned by a stagnation of the humours which grow thick there, from an exhalation of their more fluid and subtle parts.

SCISSARS, a well known instrument for cutting any thing asunder. See *Forceps*.

SCLEROPHTHALMIA, in medicine, a species of ophthalmia, wherein the eye is dry and inflamed, as are also the eye-brows.

SCLEROTICA, in anatomy, one of the tunics, or coats, of the eye: it is hard, opaque, and extended from the cornea to the optic nerve; its forepart is transparent, and called the cornea.

SCLEROTICS, medicines proper to harden and consolidate the flesh of the parts to which they are applied; as purslain, house-leek, flea-wort, garden-nightshade, &c.

SCOLOPAX, the **WOOD-CKOCK**, in ornithology, a species of numenius, with a black line on each side the head: it is a very beautiful as well as delicate bird, somewhat smaller than the partridge; the upper part of its body being of a mixed colour, mottled with black grey, and a reddish brown: the breast and belly are a pale grey, with little transverse lines of a bright brown: the upper part of the throat is of a whitish yellow, and the hinder part of the head chiefly black, with a few transverse lines of brown on it: the male is somewhat darker than the female, in its general colouring.

SCOLOPENDRA, in zoology, an insect with a very slender and long body, and furnished with a vast number of legs.

SCONCE, in fortification, a small field-fort, built for the defence of some pass, or other post. See *Fort*.

SCORBUTUS. See *Scurvy*.

SCORDIUM, **WATER GERMANDER**, in botany is comprehended by Linnaeus among the tetraciums. See *Tetrarium*.

It is celebrated for its fudorific and alexipharmic virtues, and is accordingly prescribed in malignant disorders: but it is never used alone, being only kept in the shops as an ingredient of the confectio Fracastorii, which takes its name of diascordium from it.

SCORE is sometimes used to denote the number twenty.

SCORIA, or DROSS, among metallurgists, the recrements of metals in fusion: or, more determinately speaking, that mass which is produced by melting metals and ores, and when cold is brittle, and not dissoluble in water; being properly a kind of glass. Some authors call by this name that saline mass which is produced by melting ores and metals together with saline and-reducing fluxes. But the word *scoria* is not properly to be understood of all this mass, but only of the vitrified particles which are lodged between, and adhere to the small masses of the salts, and which may be separated from them by water.

SCORIFICATION, in metallurgy, is the art of reducing a body, either entirely, or in part, into scoria.

SCORPION, in natural history, an insect frequently found in the hot countries. The opinions of authors are very different as to the sting of this creature, some asserting that there is an opening in it, through which a poisonous liquor is thrown into the wound made by it, as is the case in the tooth of the viper, &c. and others affirming that there is no such opening. Galen affirms that there is none, but most of the writers of the middle ages assert that there is. But the whole is set in the clearest light by Signior Redi, who took the pains of examining microscopically the stings of the scorpions brought alive from Tunis, Egypt, and Italy. These he nicely examined by the best glasses in the museum of the great duke of Tuscany, and could find no aperture: but not satisfied with this, he pressed the stings to try if he could make any liquor flow out of them; they were, however, so hard and horny, that squeezing could have no effect on them: and, finally, he caused a scorpion to strike upon a plate of iron, but no liquid was found thereon; so that he began to conclude Galen's opinion right, when he accidentally discovered an exceedingly small drop of white liquor upon the sting, and this he afterwards found in all the trials he made with several scorpions. And Mr. Lewenhoeck discovered an open-

ing on each side of the sting of this creature, for the emission of the poison, which he supposes is not discharged, till the sting is buried in the wound. *Baker's Microscope.*

Mr. de Maupertuis, having caused scorpions to bite several animals; of which very few died, or suffered any more than the pain of the sting, is of opinion, that oil of scorpions, and other vulgar antidotes to the poison of these animals, have rather got their reputation from the innocence of the sting of these creatures, than from any considerable virtue in the medicines. *Mém. de l'Acad. Scienc. 1731.*

SCORPION, in astronomy, the eighth sign of the zodiac. See *Sign and Zodiac.*

The stars in the constellation Scorpio, in Ptolemy's catalogue, are twenty: in Tycho's ten: and in Mr. Flamsteed's forty nine.

SCORZONERA, VIPER'S-GRASS, in botany, a genus of plants, with a compound imbricated flower, made up of a great many monopetalous, ligulated, and quinque-dentated small ones: the stamina are five very short capillary filaments: there is no pericarpium, except the imbricated cup, which becomes connivent, and contains a single oblong and striated seed after each lesser flower: the seeds are crowned with a plumose down. The roots of this plant abound with a milky juice, of a bitterish subacid taste; and hence may be of some service for strengthening the tone of the viscera, and promoting the fluid secretions. They were formerly celebrated as alexipharmics, and for expelling the measles and small-pox; but have, of late, almost lost their character in these intentions.

* SCOTLAND, kingdom of, part of which is the ancient Caledonia, has since the union been called North Britain. It is the north part of the island of Great Britain, which is now united to England, and both together make but one nation. By the consent of the Parliaments of England and Scotland, they were constituted one united kingdom ever since the 5th of queen Anne, in the year 1707. They are now under the same government of one king and parliament, with a reserve of all the statute and municipal laws of Scotland, and other privileges, &c. prior to that era; so that the legislation, which formerly was vested in the king and parliament of Scotland, independently of those of England, being removed and placed in one general parliament of Great-

Great-



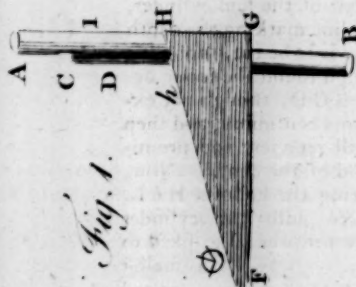


Fig. 1.

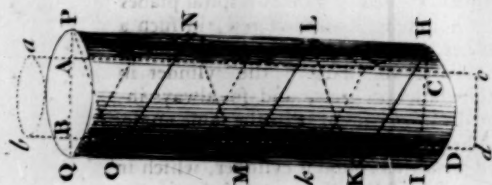


Fig. 2.



Fig. 3.

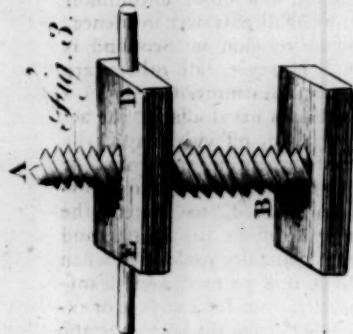


Fig. 4.

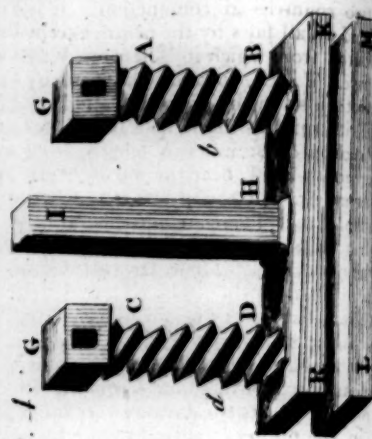


Fig. 5.

Fig. 6. Compound Sliding Rule.



Great-Britain (sixteen peers from Scotland representing their nobility, and 45 members their gentry or commonalty) the laws in common are now passed by the two countries in conjunction. It is bounded on all sides by the ocean, except the south, from which it is separated by the river Tweed, towards the east by Cheviot-hills and the river Elk, and Solway Frith towards the west. It is generally reckoned 380 miles in length, from Aldermouth head, near the Isle of Mull, to Buchaness, and 190 in breadth, where it is broadest. There are 300 islands belonging to Scotland, some of which are very considerable. These are called the Western Islands, the Orkneys, and the Shetland islands. The air is generally wholesome, though colder than that of England; but it is purified by the winds, which are pretty strong and frequent. In the northern parts the days are very long, and in the summer solstice the night is not above an hour and half long in the Isle of Sky. The soil is different in different parts, there being many rich and fruitful plains, though what is called the Highlands, is full of mountains and heaths. They do not want wheat, but the grain mostly cultivated is oats, as it will grow in the mountainous parts. The productions in Scotland are much the same as in England, though not in such plenty. In the Lowlands there is but little timber, but in the most northern parts there are forests of fir-trees, which might afford masts for the largest men of war; but it is difficult to bring them to the sea-side. They burn coals in several parts, and in the Highlands have plenty of wood: however, in other places they burn turf, peat, heath, broom, and furze. They have large flocks of sheep, and plenty of horned cattle, many of which are brought to England for sale, and even as far as London, tho' they are generally very small. They have also a great number of horses which, tho' small, will bear great fatigue. The soil produces great plenty of hemp and flax, which are manufactured in many places; and at Edinburgh particularly, they have brought all sorts of linen to the greatest perfection, and export very large quantities. Some years ago, the women never appeared abroad without their plaids; but now that custom is pretty much laid aside. This was likewise the chief dress of the Highlanders, but by a late act of parliament they have been obliged to lay them aside, and conform to the lowland dress. No country in the world has greater plenty of fish, eggs and fowls; and a very

great advantage might be made of their fisheries. They have mines of several sorts, and particularly of lead, with quarries of free-stone for building; inasmuch, that the principal towns are constructed with nothing else. They have mines of very good coal, great quantities of which are brought to London, and is known by the name of Scotch coal. With regard to what is said of their precious stones, gold and silver mines, and other uncommon productions, we shall pass over in silence. The established religion in Scotland is Presbyterian: however, all others are tolerated, or at least connived at.

SCRAPING, in naval affairs, the act of shaving or drawing off with scrapers the former crust of turpentine, tar, rosin, or such like materials with which a ship's side had been covered, to protect the planks from the effects of the sun and wind. This is generally performed when the ship is to be new painted and cleaned, as at the fitting out for a voyage or expedition, at which time the bottom is also cleaned and covered anew with a coat of sulphur, tallow, &c.

SCREW, or **SCRUE**, one of the five mechanical powers. A screw is a cylinder cut into several concave surfaces, or rather a channel or groove made in a cylinder, by carrying on two spiral planes the whole length of the screw, in such a manner, that they may be always equally inclined to the axis of the cylinder in their whole progress, and so always inclined to the base or it in the same angle.

The screw may also be considered as a wedge carried round a cylinder, which in that case is called the arbor of the screw; the wedge, so carried on, making what is called the thread of the screw, as may be seen in the plate XLVI. *fig. 1, 2, 3, 4, and 5*; the arbor of the screw being *AB* in *fig. 1*, and *acbd* in *fig. 2*, as if the cylinder *ACBD* was inscribed within the screw. Here we may see the manner how a screw is made; for if it be cut out of the cylinder *PHIQ*, then *HKL MNOP* is a spiral line going about the cylinder, making the prominent part to be left of the said cylinder, and *bbklmno*, the line marking the depth to which the screw is to be cut, supposing the same line to go round the inner cylinder or arbor *ABCD*, though not expressed here, to avoid confusion; and then *bLl Nn*, &c. will represent the prominent part or thread of the screw. Now, if instead of cutting the hollows *HbL*, *LlN*, *NnP*, &c. into the cylinder *PHIQ*, a continued wedge be fixed to a smaller

a smaller cylinder, as $A C B D$, or rather $a c b d$, the same kind of screw will be made, and $a b c d$ will be the arbor of that screw. Sometimes the most prominent part of the thread, as $L N$, &c. is not sharp but flat, and then the thread is called a square thread, as in *fig. 5*, which represents the section of such a screw. This sort of thread is not used in wood, but in iron, and in other metals; it is of good service, being commonly more durable, and raising the weight with more ease than the sharp thread.

Force of the screw. To make an estimate of the force of the screw, which may be compared either to an inclined plane, or to a wedge, according as its arbor does or does not advance in a progressive motion whilst it turns round its axis to raise or stop a weight, or to press bodies together, which are the several uses of a screw, let us take a flexible wedge, as, for example, one of paper, and coil it round a cylinder, *fig. 1.* as is represented in the figure, where $A B$ is the arbor, $C I D$ one thread or helix, $D H E$ another, and $E T G$ part of the wedge left to shew the proportion between the power that turns the screw and the weight W .

If the weight is pushed up the wedge (or, which is the same thing, raised perpendicularly by the wedge slipping under it) from F to H in the direction $W w$, then will $H G$ be the velocity of the weight, and $G T$ the velocity of the power, which is the case of the inclined plane becoming a wedge; and this will be the analogy for the screw thus acting.

As a circle whose diameter is $H b$: to $H I$ the distance of two threads :: (or as the base $F G$: to the perpendicular $H G$: :) so is the weight: to the power applied to the arbor at A , to raise a weight up the thread $H D I C$.

N. B. We suppose the diameter of the arbor at A and of the screw at H nearly equal.

This is the case of *fig. 4.* where the moveable plank $D K$ is carried down, by turning round the heads $G G$ of the screws $A B$ and $C D$, in order to press strongly the bodies placed between the planks $D K$ and $M L$, whilst the piece $H I$, fixed on the upper plank, is either guided through an hole, or, being only hooked at, serves to shew whether the plank $K D$ be brought down horizontally, as the screws are turned. When long levers are thrust into the square holes at the heads of the screws, the force

of the screw is much encreased, and then the weight will be to the power :: as the circumference of the circle described by that part of the lever to which the hand is applied: to the distance between two threads. Wherefore, as the circumference of the circle is to the distance of two thirds of an endless screw :: so is the resistance of the teeth of the wheel: to the power applied to the handle.

Archimedes screw, in hydraulics, a kind of spiral pump, for raising water, so called from its inventor Archimedes.

Endless or Perpetual screw, one so fitted in a compound machine, as to turn a dented wheel; so called, because it may be turned for ever without coming to an end.

SCRIBE, an officer among the Jews, whose business was to write; of which there were three kinds: the first and principal of which were the scribes of the law, whose office was to write and interpret scripture; these were in great credit and esteem among the Jews, and had even of the precedence of the priests and sacrificers, and their decisions were received with almost the same respect as the law of God itself: the second kind, properly called scribes of the people, were a sort of magistrates: and the third, were public notaries, or secretaries of the council; which were the least considerable.

The scribes, among the Romans, wrote out decrees or acts, and made out authentic copies of them.

SCRIBING, in joinery, &c. a term used when one side of a piece of stuff is to be fitted to another that is irregular. In order to make these join close all the way, they scribe it; that is, they lay the piece to be scribed close to the other they intend to scribe it to, and opening their compasses to the widest distance these two pieces stand from each other, they bear up the point of one of the legs against the side they intend to scribe to, and with the other point draw a line on the stuff to be scribed. Thus they form a line on the irregular piece parallel on the edge of the regular one; and if the stuff be cut exactly to the line, when these pieces are put together they will seem a joint.

SCRIPTURE, an appellation given, by way of eminence, to the sacred and inspired writings of the Bible. See *Bible*, *Canonical*, &c.

SCROPHULA, in medicine, the king's evil. The word is Latin, being a diminutive of *scropha*, a swine; because that animal is said to be subject to such a kind of disorder. The cure of this dis-

case is to be attempted by bleeding, purging, and such medicines as are most proper for correcting the viscosity, flatness, and acrimony of the humours. The best cathartic is dulcified mercury six times sublimed, which should be joined with rhubarb for children; but to adults it may be given alone, with a gentle purging draught some hours after it. The next to this in virtue is jalap. And our purging waters are also useful, as they scour the glands, and open the body at the same time. In fine, a pill composed of mercury six times sublimed and precipitated sulphur of antimony, of each one grain; of aloes three or four grains made up with a syrup of balsam, and taken every night, will be found serviceable, not only in this disease but in others arising from viscid humours. The medicines which correct this pravity of the blood and humours, are, for the most part, of the diuretic kind, such as burnt sponge, the diuretic salt, and vitriolated tartar; which are the more proper, because they are somewhat laxative. To these may be added the less compound lime-water. For my part, says Dr. Mead, I have very often experienced the good effects of the following powder, taken twice a day, with three or four glasses of the aforesaid water. Take of burnt sponge one scruple, of purified nitre, coralline, and white sugar, each ten grains: mix these together. *Mead.*

SCROTUM, or SCORTUM, in anatomy, the cutaneous covering of the testes outwardly. It is a bag common to both, formed by a continuation of the skin of the neighbouring parts, and commonly very uneven, having a great number of rugæ on its outer surface. Interiorly it is fleshy, and forms a muscular capsula for each testicle called dartos. The exterior or cutaneous portion of the scrotum, is nearly of the same structure with the skin in general, of which it is a continuation, only it is something finer; and it is likewise plentifully studded with sebaceous glands and bulbs, or roots of hairs. Though it is a common covering for both testicles, it is, nevertheless, distinguished into two lateral parts by a superficial and uneven prominent line, which appears like a kind of suture, and from thence has been termed raphe. This line is a continuation of that which divides in the same manner the cutaneous covering of the penis; and it is continued through the peritonæum, which it divides, likewise all the way to the anus. It is only superficial, and does not appear

on the inside of the skin. The inner surface of the cutaneous bag is lined by a very thin cellular membrane; through which the bulbs and glands appear very distinctly, when we view its inside. The rugæ of the scrotum are, in the natural state, commonly a mark of health, and then its size is not very large. It increases in size, principally according to its length; and then the rugæ disappear more or less, according to the degrees of the preternatural state or indisposition. *Winflow's Anat.*

SCROWLS, or SCROLLS, in architecture. See *Volutes*.

SCRUPLE, a weight, containing twenty grains, or the third part of a dram. Among goldsmiths, it is twenty-four grains.

SCRUPLES *Eclipsed*, in astronomy, that part of the moon's diameter which enters the shadow, expressed in the same measure wherein the apparent diameter of the moon is expressed.

SCRUTINY, a strict examination of the several votes hastily taken at an election, in order to discover any irregularities committed therein by unqualified voters, &c.

SCUDDING, in navigation, the act of flying before the wind in a great storm.

SCULPTURE, an art which, by the means of a design or plan, and of solid matter, imitates the palpable objects of nature. Its matter is wood, stone, marble, ivory; different matters, as gold, silver, copper; precious stones, as agate and the like. This art includes, also, casting or founding, which is subdivided into the art of making figures of wax, and that of casting them in all sorts of metals. By sculpture we understand here all those different species. The sculptors and painters have often had great disputes amongst themselves upon the pre-eminence of their several professions; the first founding the preference upon the duration of their works, and the latter opposing them with the effects of the mixture and vivacity of colours. But, without entering into a question not easy to decide, sculpture and painting may be considered as two sisters that have but one origin, and whose advantages ought to be common; we might almost say, as the same art, of which design is the soul and rule, but which work in a different manner, and upon different materials. It is difficult, and little important, to trace through the obscurity of remote ages, the first inventors of sculpture. Its origin may

may be dated with that of the world, and we may say that God was the first statuary, when, having created all beings, he seemed to redouble his attention in forming the body of man, for the beauty and perfection of which he seems to have wrought with a kind of satisfaction and complacency. The first sculptors made their works of earth, whether they were statues, or moulds and models. This made the statuary Praxiteles say, that the works which were either cast, or cut with a chissel or graver, owed their being to the making figures of earth, called plastice. It is said, that Demaratus, the father of Tarquinius Priscus, who took refuge from Corinth in Etruria, brought thither abundance of workmen with him, who excelled in that art, and introduced the taste for it there, which afterwards communicated itself to the rest of Italy. The statues erected in that country to the gods, were at first only of earth, to which, for the whole ornament, was added a red colour. We ought not to be ashamed of the men, says Pliny, who adored such gods. They set no value upon gold and silver, either themselves or their deities. We find that the ancients made statues of almost all sorts of wood. There was an image of Apollo at Sicyone made of box. At Ephesus, according to some writers, that of Diana was of cedar, as well as the roof of the temple. The lemon-tree, the cypress, the palm, the olive, the ebony, the vine, in a word, all trees not subject to rot, or to be worm-eaten, were used for statues. Marble soon became the most usual and most esteemed material for works of sculpture. It is believed that Dipænes and Scyllis, both of Crete, were the first that used it at Sicyone, which was long, in a manner, the center and school of arts: they lived about the 50th Olympiad, a little before Cyrus reigned in Persia. Bupalus and Anthernus, two brothers, made themselves famous for the art of carving marble in the time of Hipponax, that is, in the 60th Olympiad. That poet having a very ugly face, they made his portrait, in order to expose it to the laughter of spectators. Hipponax conceived a more than poetic fury against them, and made such virulent verses upon them, that, according to some, they hanged themselves through grief and shame. But this fact cannot be true, because there were works of their making after that time.

It is believed that the manner of cut-

ting large blocks of marble into many thin pieces, to cover the walls of houses, was invented in Cairo. The palace of king Mausolus, at Halicarnassus, is the most ancient house that had these incrustations of marble, which were one of its greatest ornaments.

The use of ivory, in works of sculpture, was known from the earliest ages of Greece. Homer speaks of them, though he never mentions elephants.

The art of casting gold and silver is of the greatest antiquity, and cannot be traced to its origin. The gods of Laban, which Rachel stole, seem to have been of this kind. The jewels offered to Rebecca were of cast gold. Before the Israelites left Egypt, they had seen cast statues, which they imitated in casting the golden calf, as they did afterwards in the brazen serpent. From that time all the nations of the East cast their gods, *deus consuetudo*, and God forbade his people to imitate them upon pain of death. In the building of the Tabernacle, the workmen did not invent the art of founding; God only directed their taste. It is said that Solomon caused the figures used in the Temple, and elsewhere, to be cast near Jericho, because it was a clayey soil, which shews that they had even then the same manner of founding great masses as we have.

There are several ways of carving metals and precious stones; for in both the one and the other they work in relief, and in hollow, which is called engraving. The ancients excelled in both ways. The basso relievos which we have of theirs are, by good judges, infinitely esteemed: and as to engraved stones, as the fine agates and crystals, of which there are abundance in the king of France's cabinet, it is generally said, that there is nothing so exquisite as those remains of the ancient masters. Though they engraved upon almost all kinds of precious stones, the most finished figures which we have of theirs are cut upon onyxes, a kind of agate not transparent: or on cornelians, which they found more fit for engraving than any other stones, being more firm and even, and cut more neatly; and, also, because there are different colours that run one above the other in the onyx, by the means of which, in relievo, the bottom continues of one colour, and the figures of another. To engrave upon gems and crystals, they used, as now, the point of a diamond. The art of sculpture was principally employed upon cups

cups used at feasts: these pieces were very rich and curious, as well as of the most costly materials.

One of the greatest advantages the art of making portraits ever received for the eternizing its works, is that of engraving upon wood and copper-plates, by the means of which a number of prints are taken off, that multiply a design almost to infinity, and convey the artist's thoughts into the different parts, which before could only be known from the single piece of his own work. This was the invention of a goldsmith at Florence.

SCUPPERS, in ship-building, small channels cut through the ship's side, with a gradual slope from the decks. They are used to carry off the water which may lie on the deck; for which purpose there is frequently a leathern pipe nailed on the out-side all round the scupper-hole, to carry the water down without staining or dirtying the vessel's side. These are termed scupper-holes.

SCURVY, *Scorbutus*, a name given by medicinal writers to a disease so various and different in appearance, that it does not seem to be one and the same distemper. In the northern countries it has always been common, and the nearer they are to the sea, the more severe it proves: accordingly the Danes, Norwegians, and other inhabitants of the coasts of the Baltic, are vastly afflicted with it; nor do the Germans, Dutch, or our own countrymen escape its fury.

It begins by foul ulcers in the mouth and legs, whence it is called stomacace and sceletyrbe by Pliny, who imputes it to the bad qualities of water, and says, that the herba Britannica, which is believed to be the hydrolapathum nigrum of Muntingius, or great water-dock, was found to be its cure. But the disease was known long before Pliny's time: for Hippocrates describes it by the name of σπλην μαγας, or great spleen, and says, likewise, that it arises from drinking cold, crude, turbid waters.

I remember, says Dr. Mead, to have formerly seen, in St. Thomas's hospital, an instance of this case in a country fellow of the Isle of Sheppy, which place is notorious for moist thick air, and unwholesome water. When the Roman army, under the command of Claudius, landed in Britain, and the troops were stationed in the above-mentioned island and places adjacent, they there contracted this disease; and it is not improbable that some of the natives

shewed them the herb which Pliny says was of service to them, and that the Romans gave it the name of herba Britannica, from the country; for it is well known that the emperor embarked his army for that expedition at Boulogne, which is directly opposite to Kent. Strabo relates a similar story of the Roman army which Augustus sent into Arabia under the command of Aelius Gallus: for, he says, that while they were at Albus Pagus, the soldiers were seized with disorders of the mouth and legs, called stomacace and sceletyrbe, which are an endemic in that country, and are a sort of relaxation proceeding from the waters and vegetables. Now to me it is very plain, that the unwholesome sea air, bad diet, and worse water, rendered that climate subject to those disorders; for Prolemy, in his Geography, places Albus Pagus on the coast of the Sinus Arabicus, or Red Sea. But to return from this digression: The poor patient had an irregular intermitting fever, with a bad habit of body, and likewise an ill-natured ulcer in each of his legs. By the use of medicines proper for the scurvy, I mean bitters and diuretics, he seemed to grow better, for one of the ulcers was, by surgical applications, entirely healed; but while the other was under cure, a gangrene seized the part unexpectedly; which being scarified, in order to check its progress, the patient died suddenly. Upon opening the abdomen, we were struck with amazement at the monstrous size of the spleen; for it weighed five pounds and a quarter, whereas the liver weighed but four and a quarter. But its bulk seemed to be its only defect; for it retained its natural shape and colour, and had not the least scirrhoty or other hardness: and its inside was, as usual, of a dark livid hue, with lax fibres, and deep-coloured blood. From the above-mentioned ulcers the breath becomes offensive, the gums are corrupted and turn livid, and sometimes blackish, and upon pressing them lightly with the finger, they emit a dusky gore: besides, they are so lax and flabby, that they quit their field of the teeth; and these are sometimes so loose, that they may all be pulled out with great ease. In the mean time greenish and livid spots, like the remains of ecchymoses, appear on various parts of the body, as on the arms, buttocks, thighs, legs, and frequently all over the skin, so as to make it have the appearance of a jaundice. The patient is also

tortured with severe gripings. And from this symptom it is that the disease has obtained its name, being derived from the Saxon word *secherbock*, or *secherbuck*, which signifies tearings of the belly.

Besides unwholesome waters, medical writers attribute the disease partly to salted provisions and pulse; which, as they are of different concoction, furnish the body with gross and improper nutriment. But they seem not to have sufficiently attended to a more universal cause, I mean bad air, which, taken into the lungs, is very prejudicial. This is particularly manifest in long voyages, in which the sailors are most severely afflicted with this distemper, of which we have a remarkable and moving account in the history of lord Anson's expedition to the South Seas, in which that great commander lost near one third part of his men by this cruel enemy; and the calamity rose to such a high pitch, that the callus of broken bones, which had been completely formed for a long time, was found dissolved, and the fracture seemed as if it had never been consolidated. Wherefore, in these cases, there must certainly be a high degree of putrefaction; and the blood becomes so foul a mixture, that whensoever it be drawn, it has nothing of its natural red colour, but resembles a dark muddy puddle. Now, as to the manner in which the causes above-mentioned corrupt and putrify the humours, it will be easily found by those who are well acquainted with the proportion and laws of motion in the animal machine.

With regard to the cure, it is much easier to prevent the scurvy than to remove it; for when it has once taken root in the body, it is very difficult to drive it out by medicines. Now, its best remedy is good wholesome air and proper diet; wherefore, as soon as a person is taken ill, if he be at sea, he ought to alter his situation as soon as possible, and get ashore to breathe the land air; but if on land, he should go into the country for the benefit of purer open air. And in both cases, what flesh he eats should be fresh and tender; but the greatest part of his food ought to be vegetables, both such as abound in volatile salt, as scurvy-grass, cresses, brook-lime, and the like; and those which are of a cooling nature, as sorrel, endive, lettuce, purslain, and others of this kind. And it will often be beneficial to eat all these, or some of each sort, promiscuously together. But the greatest service may be expected from

subacid fruits, as lemons, oranges, and pomegranates, eaten frequently upon account of their cooling and subaltringent quality. *Mead's Monita & Precepta.*

SCUTAGE was anciently a tax imposed on such as held lands, &c. by knight's service, towards furnishing the king's army: hence *scutagio habendo* was a writ that lay for the king, or other lord, against tenants holding by knight's service, to serve in person, or send a sufficient man in their room, or pay a certain sum, &c.

SCUTIFORME OS, in anatomy, the chief bone of the knee, called also patella, mola, &c.

SCUTIFORMIS CARTILAGO, in anatomy, one of the cartilages of the larynx, the broadest and biggest of them all, called also thyroides. This cartilage is of a quadrangular figure, and stands in the anterior part, where the pomum Adami makes its prominence, whence it is sometimes called the anterior cartilage. It is gibbous without-side, and hollow within; sometimes double, chiefly in women, in whom it does not advance so far forward as in men.

SCUTTLE, in ship-building, a sort of small square hole, cut through the decks or hatch-coverings of a ship, to pass up and down through.

* SCYLLA, in fabulous history, the daughter of Phorceys, who being beloved by Glaucus, that marine deity, after attempting in vain to gain her affections, applied to Circe, beseeching her by her art to inspire the disdainful virgin with the same pangs he endured. Circe now avowed her own passion for Glaucus, and endeavoured to win him to her love; but finding her endeavours fruitless, vowed revenge, and by her magic spells so infected the fountain in which Scylla bathed, that on her entering it her lower parts were turned into dogs; when being affrighted at herself, she plunged into the sea, where she was changed into a rock, famous for the shipwrecks it has occasioned. This rock lies between Italy and Sicily; and the noise of the waves beating on it is generally supposed to have given rise to the fable of the barking of dogs and howling of wolves, ascribed to the imaginary monster.

SCYTALA, in mechanics, a term used by some writers, for a kind of radius, or spoke, standing out from the axis of a machine, as an handle or lever to turn it round and work it by.

SEA, in geography, is frequently used

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to signify that vast body of water encompassing the whole earth, more properly called ocean. It is more properly used for a particular part or division of the ocean; denominated from the country it washes, or other circumstances. As the Irish Sea, Mediterranean Sea, Baltic Sea, North Sea, Red Sea, &c. The sea differs in saltness in different parts; it is in general observed, that in the hottest climates the water is saltest. When salt water freezes, it hath been thought to let fall all its salt; the ice of sea-water, and the water melted from it, tasting fresh, and being good for boiling meat and pease in. Captain Middleton, being in Hudson's Straights, took ice from under the surface of the sea, which he melted till he got forty quarts of water; these he evaporated to dryness, and out of that quantity had only six ounces of salt.

General Motion of the Sea. Mr. Dassic of Paris, in a work published about sixty years ago, has been at great pains to prove that the sea has a general motion, independent of winds and tides, and of more consequence in navigation than is usually supposed. He affirms that this motion is from east to west, inclining towards the north, when the sun has passed the equinoctial northward, and that during the time the sun is in the northern signs; but the contrary way, after the sun has passed the said equinoctial southward; adding, that, when this general motion is changed, the diurnal flux is changed also: whence it happens, that in several places the tides come in during one part of the year, and go out during the other; as on the coasts of Norway, in the Indies, at Goa, Cochinchina, &c. where, while the sun is in the summer signs, the sea runs to the shore; when in the winter signs, from it. On the most southern coasts of Tonquin and China, for the six summer months, the diurnal course runs from the north with the ocean; but, the sun having repassed the line toward the south, the course declines also southward. *Philos. Transact.* No. 135.

Basin of the SEA, a term used by geographers, and other writers, to express the bottom of the sea in general.

SEA Breaches, a term used by the farmers to express the overflowing of their low lands near the sea by the sea-water.

SEAL, a puncheon, or piece of metal, or other matter, usually either round or oval whercon are engraven the arms, de-

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vice, &c. of some prince, state, community, magistrate, or private person, often with a legend or subscription, the impression whereof, in wax, serves to make acts, instruments, &c. authentic. Before the time of William the Conqueror, the makers of all deeds only subscribed their names, adding the sign of the cross, and a great number of witnesses; but that monarch, and the nobility, used seals with their arms on them, which example was afterwards followed by others. The colour of the wax wherewith this king's grants were sealed was usually green, to signify that the act continued fresh for ever, and of force. A seal is absolutely necessary in respect of deeds, because the sealing of them makes persons parties thereto, and without being sealed, they are void in law. It is held, that if a seal be broken off, it will render the deed void, and that where several are bound in a bond, the pulling off the seal of one vacates it as to all the rest. The king's great seal is that whereby all patents, commissions, warrants, &c. coming from the king are sealed. The keeping hereof is in the hands of the lord high-chancellor, who is hence denominated lord keeper. Indeed there is some difference between the lord chancellor and lord keeper, not in office, but in the manner of creation, the latter being made by the delivery of the great seal to him by the king, but the former having a patent. The king's privy seal is a seal that is usually first set to grants that are to pass the great seal. See *Keeper*.

SEAL is also used for the wax or lead, and the impression thereon, affixed to the thing sealed.

SEALER, an officer in chancery, appointed by the lord chancellor or keeper of the great seal, to seal the writs and instruments there made in his presence.

SEALING, in architecture, the fixing a piece of wood or iron in a wall with plaster, mortar, cement, lead, and other solid binding. For staples, hinges, and joints, plaitter is very proper.

SEALING-WAX. See *Wax*.

SEALING of WRITINGS, was first introduced in 1685.

SEAM or *SAME of Corn*, a measure of eight bushels.

SEAM of Glass, the quantity of 120 pounds, or 24 stones, each five pounds weight. The seam of wood is an horse-load.

SEAMS, in ship-building, the interstices between the planks in a ship's decks,

sides, or bottom : they are filled with a quantity of oakum, or old ropes untwisted and drawn asunder, after which they are covered with hot melted pitch, to prevent the entrance of the water. See *Caulking*.

SEAR-CLOTH, or **CERE-CLOTH**, in surgery, a form of external remedy somewhat harder than an unguent, yet softer than an emplaster, though it is frequently used both for the one and the other. The sear-cloth is always supposed to have wax in its composition, which distinguishes and even denominates it. In effect, when a liniment or unguent has wax enough in it, it does not differ from a sear-cloth. Sear-cloths are a kind of substitutes to friction, and are sometimes used for other purposes : the best are compounded of resolvent drugs, as saffron, myrrh, and aloes, incorporated with wax and gums, as galbanum, gum ammoniac, and sagapenum, the whole tempered with wine.

SEASONS, in cosmography, certain portions or quarters of the year, distinguished by the signs which the earth then enters, or by the meridian altitudes of the sun, consequent on which are different temperatures of the air, different works in tillage, &c. The year is divided into four seasons, spring, summer, autumn, and winter. See *Spring*.

SECALE, or **SECALINA**, **RYE**. See *Rye*.

SECANT, in geometry, is a line that cuts another, or divides it into two parts.

* **SECKER**, (**THOMAS**) archbishop of Canterbury, was born at Sibthorpe, near Newark, in Nottinghamshire, in 1693. His father was a dissenter, and lived upon a small patrimony. He was sent to school, at Chesterfield, in Derbyshire, which he left about the year 1708, and went to a dissenting academy in Yorkshire, from which in about a year's time he removed to another in Gloucester, where he contracted an acquaintance with Mr. Butler, afterwards bishop of Durham. He applied himself early to critical and theological subjects, and about the year 1716, began the study of physic. This he pursued in London till 1719, when he went to Paris, and there attended lectures on all the various branches of the medical art, but never wholly discontinued his application to divinity. Here he first became acquainted with Mr. Martin Benson, afterwards bishop of Gloucester. Having an unex-

pected offer made to him by Mr. Edward Talbot, (through Mr. Butler) of being provided for by his father, the bishop of Durham, if he chose to take orders in the church of England; after mature deliberation, he resolved to embrace the proposal. In 1720, he returned to England, and Mr. Butler introduced him to Mr. Edward Talbot, to whom he was before unknown. To facilitate his obtaining a degree at Oxford, he went in January, 1721, to Leyden, where he took the degree of doctor in physic, and published a dissertation *De Medicina Statica*. Having staid at Leyden about three months, he returned to England, and entered himself a gentleman commoner in Exeter College, Oxford, and being soon after ordained priest, by bishop Talbot, became his Lordship's domestic chaplain.

On the 12th of February, 1723-4, he was instituted to the rectory of Houghton-le-Spring, in the county of Durham, and in October, 1725, married the sister of his friend Dr. Martin Benson, and chiefly on account of her health, two years after, exchanged Houghton for a prebend in the church of Durham, and the living of Ryton, near Newcastle, and afterwards obtained the degree of doctor of civil law. In 1732, he was made chaplain to the king, and the next year resigned the living of Ryton for that of St. James's, Westminster. His eminent abilities as a preacher and divine, his exemplary discharge of his parochial duties, with that of diffusive benevolence and generosity, which made him privately remove the distresses of many poor families, who strove to conceal their wants; soon recommended him to a more exalted station. In 1734, he was made bishop of Bristol; in 1737, was translated to Oxford; and in 1750, made dean of St. Paul's, and then resigned his prebend of Durham, and the rectory of St. James's. In short, the great talents he continued to display, and his high reputation for piety, and the most noble acts of beneficence, at length pointed him out as a person every way worthy of being raised to the supreme dignity of the church, and he was confirmed archbishop of Canterbury, in April 1758. The manner of his grace's death was too singular to be omitted; he was, for several years, much afflicted with the gout, and in the winter before he died, he had frequently violent pains in his shoulder, which at length removed to his thigh, and there fixed, with continual and almost unremitted severity, till the

31st of July, when, as he was turning himself in his couch, he broke his thigh-bone; but though it was immediately set, he fell into a slight kind of delirium, in which he lay, without any pain, till the 3d of August, when he expired with great tranquillity, in the 75th year of his age. After his death, it was found that the thigh-bone was quite carious, and that the excruciating pains he had so long felt, and which he bore with wonderful patience and fortitude, were owing to the gradual corrosion of this bone, by some acrimonious humour.

SECOND, in geometry, chronology, &c. the sixtieth part of a prime or minute, whether of a degree, or of an hour; it is denoted by two small accents, thus ("").

SECOND, in music, one of the musical intervals; being only the difference between any sound, and the next nearest sound, whether above or below it. As in the compass of a tone some reckon nine sensible sounds, and others ten, which form the intervals called commas; so there are eight kinds of seconds according to the former opinion, and nine according to the latter. However, in practice, they usually distinguish only four sorts. 1. That called a diminished second, containing four commas; being the difference, for instance, of a natural *ut*, and an *ut* sharp. 2. That called a second minor, or imperfect second, containing five commas, viz. from *mi* to *fa*; or from *la* to *B* *mol*; or from *fa* sharp to *sol*. 3. A major second, called by the Italians a perfect second, containing nine commas. 4. A redundant second, composed of a whole tone, and a minor semi-tone.

SECONDARY, in general, something that acts as second, or in subordination to another.

Secondary circles of the sphere, are circles passing through the poles of some great circle: thus the meridians and hour-circles are secondaries to the equinoctial. There are also secondaries passing through the poles of the ecliptic, by means of which all stars are referred to the ecliptic. See *Ecliptic*, *Longitude*, *Sphere*, &c.

SECRETARY, an officer who by his master's orders writes letters, dispatches, and other instruments, which he renders authentic by his signet. Of these there are several kinds; as 1. Secretaries of state, who are officers that have under their management and direction the most important affairs of the kingdom, and are obliged constantly to attend on the

king: they receive and dispatch whatever comes to their hands, either from the crown, the church, the army, private grants, pardons, dispensations, &c. as likewise petitions to the sovereign; which when read, are returned to them; all which they dispatch according to the king's direction. They formerly exercised the authority of committing persons for treason, and other offences against the state, as conservators of the peace at common law, or as justices of the peace throughout the kingdom. But Mr. Wilkes having contested the matter with them in the court of Common Pleas, it was determined by Lord Camden, (then Lord Chief Justice of that court) that the law had not invested them with such power, and the Jury gave a verdict of two thousand pounds against the earl of Halifax, for having, as secretary of state, presumed to exercise such authority. They are members of the privy-council, which is seldom or never held without one of them being present; and as to the business and correspondence in all parts of this kingdom, it is managed by either of the secretaries without any distinction; but with respect to foreign affairs, the business is divided into two provinces or departments, the southern and the northern, comprehending all the kingdoms and states that have any intercourse with Great Britain; each secretary receiving all letters and addresses from, and making all dispatches to, the several princes and states comprehended in his province: which division still subsists, notwithstanding the addition of a third secretary for Scotland, and a fourth for the American department. Ireland is under the direction of the elder secretary, who has the southern province, which also comprehends France, Italy, Switzerland, Spain, Portugal, and Turkey: the northern province includes the Low Countries, Germany, Denmark, Sweden, Poland, and Muscovy. Each of the secretaries have both for their own accommodation and their officers, a table at the king's charge, or else board-wages. To the secretaries of state belong the custody of that seal properly called the signet, and the direction of two other offices, one called the paper office, and the other the signet-office.

2. Secretary of an embassy, a person attending an ambassador for writing dispatches, relating to the negotiation. There is a great difference between the secretary of an embassy, and the ambassador's

sador's secretary; the last being a domestic or menial of the ambassador, and the first, a servant or minister of the prince.

3. The secretary of war, an officer of the war-office, who has two chief clerks under him, the last of which is the secretary's messenger. There are also secretaries in most of the other offices.

SECREATION, the act whereby the several juices or humours of the animal body are separated from the blood by means of the glands. It is a thing well known to philosophers, and particularly to chemists, that a piece of waste paper, which consists of a parcel of filaments connected together, being once soaked in oil or water, will not suffer any other liquor to pass through it, but such as it was saturated with before, stopping all others. It is also known that scraps of cloth or cotton imbued with oil or water, and dipped in a vessel, in which oil and water are mixed together, that which was saturated with water will suffer nothing to pass but water, and that which had the oil will let nothing pass but oil. There are to be found in the secretory vessels of the glands a similar structure, an interwoven mass of filaments very like those of paper, cloth, or cotton, though disposed a little differently. This texture, once filled with a certain juice, will let none pass through of all the juices that come to the orifices of these vessels, but that with which they were already saturated. This being so, the blood, which we ought to consider not as a homogeneous fluid, but as composed of an infinity of parts, or different molecules, such as oily, mucilaginous, watery, subtle, and grosser saline particles, being carried by the arteries into the gland, divides itself into all the little ramifications of the artery where it is infinitely extended, and wherein all the molecules are obliged to file off, as it were one by one, by the straight passage of the artery into the vein, and consequently to roll over the orifices of the secretory vessels of the glands, whose villous texture is before saturated with a juice of a certain nature; and these particles, which are of the same nature with that juice which presents itself at the orifice or entrance of the secretory vessels, join themselves to it, and enter with the greater liberty, being pushed on by those that follow them; so that they successively run through the whole vessel, and at length pass out by

the excretory canal; whilst the others, which are not of the same nature, roll over the orifice of the secretory vessels, without ever mingling with the juice they meet there, and pass on to the returning vein to go to the heart again.

SECT, a collective term, comprehending all such as follow the doctrines and opinions of some famous divine, philosopher, &c. See *Heresy* and *Schism*.

SECTION, in general, denotes a part of a divided thing, or the division itself. Such, particularly, are the subdivisions of a chapter; called also paragraphs and articles: the mark of a section is §.

SECTION, in geometry, denotes a side or surface appearing of a body or figure cut by another; or the place where lines, planes, &c. cut each other. The common section of two planes is always a right line; being the line supposed to be drawn on one plane by the section of the other, or by its entrance into it.

SECTION of a Building, in architecture, is the same with its profile; or a delineation of its heights and depths raised on a plane, as if the fabric was cut asunder to discover its inside.

Conic SECTIONS, in geometry. See *Cone* and *Conic*.

SECTOR, a mathematical instrument, of great use in finding the proportion between quantities of the same kind, as between lines and lines, surfaces and surfaces, &c. for which reason the French call it the compass of proportion. The great advantage of the sector above common scales, &c. is, that it is adapted to all radii, and all scales. For, by the line of chords, sines, tangents, &c. on the sector we have lines of chords, sines, tangents, &c. adapted to any radius betwixt the length and breadth of the sector, when opened. The sector is founded on the fourth proposition of the sixth book of Euclid, where it is demonstrated, that similar triangles have their homologous sides proportional.

Use of the Line of Polygons on the SECTOR.—1°. To inscribe a regular polygon in a given circle. Take the semi-diameter of the given circle, in the compasses, and adjust it to the number 6, on the line of polygons, on each leg of the sector; then, the sector remaining thus opened, take the distance of the two equal numbers, expressing the number of sides the polygon is to have; e. gr. the distance from 5 to 5 for a pentagon, from 7 to 7 for a heptagon, &c. These distances

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distances carried about the circumference of the circle will divide it into so many equal parts.

2°. To describe a regular polygon, e. gr. a pentagon, on a given right line. Take the length of the line in the compasses, and apply it to the extent of the number 5, 5, on the lines of polygons. The sector thus opened, upon the same lines take the extent, from 6 to 6; this will be the semi-diameter of the circle the polygon is to be inscribed in. If, then, with this distance, from the ends of the given line, you describe two arcs of a circle, their intersection will be the center of the circle.

3°. On a right line, to describe an isosceles triangle, having the angles at the base double that at the vertex. Open the sector, till the ends of the given line fall on 10 and 10 on each leg; then take the distance from 6 to 6. This will be the length of the two equal sides of the triangle.

Use of the Lines of Sines, Tangents, and Secants, on the SECTOR.—By the several lines disposed on the sector, we have scales to several radiuses; so that having a length, or radius, given, not exceeding the length of the sector when opened, we find the chord, sine, &c. thereto. Ex. gr. Suppose the chord, sine, or tangent, of 10 degrees, to a radius of 3 inches, required: make 3 inches the aperture, between 60 and 60, on the lines of chords, be taken with the compasses, it will the same extent reach from 45 to 45 on the line of tangents, and from 90 to 90 on the line of the sines on the other side; so that to whatever radius the line of chords is set, to the same are all the others set. In this disposition, therefore, if the aperture between 10 and 10, on the lines of chords, be taken with the compasses, it will give the chord of 10 degrees. If the aperture of 10 and 10 be in like manner taken on the lines of sines, it will be the sine of 10 degrees. Lastly, if the aperture of 10 and 10 be in like manner taken on the lines of tangents, it gives the tangent of 10 degrees.

If the chord, or tangent, of 70 degrees were required; for the chord, the aperture of half the arch, viz. 35, must be taken, as before: which distance, repeated twice, gives the chord of 70°. To find the tangent of 70° to the same radius, the small line of tangents must be used, the other only reaching to 45: making, therefore, 3 inches the aperture between 45 and 45 on the small

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line; the extent between 70 and 70 degrees, on the same, will be the tangent of 70° to 3 inches radius.

To find the secant of an arch, make the given radius the aperture between 0 and 0 on the line of secants: then will the aperture of 10 and 10, or 70 and 70, on the said lines, give the tangent of 10°, or 70°.

SECULAR, something temporal, in which sense the word stands opposed to ecclesiastical: thus we say, secular power, secular jurisdiction, &c. Secular is more peculiarly used for a person who lives at liberty in the world, not shut up in a monastery, nor bound by vows, or subjected to the particular rules of any religious community; in which sense it stands opposed to regular. The Romish clergy is divided into secular and regular.

SECULAR GAMES, in antiquity, solemn games held among the Romans once in an age. These games lasted three days and as many nights, during which time sacrifices were performed, theatrical shews exhibited, with combats, sports, &c. in the circus.

SECULAR POEM, a poem sung or rehearsed at the secular games, of which kind we have a very fine piece among the works of Horace, being a Sapphic ode at the end of his Epodes.

SECULARIZATION, the act of converting a regular person, place, or benefice, into a secular one.

SECUNDINES, in medicine, the several coats or membranes inclosing the fœtus in the womb. These are the chorion, amnios, and allantois. It very often happens that these are retained in the womb after child-birth, and great mischiefs ensue from it. The assistance of a skilful hand is, in many cases, necessary to the getting them out; and this is to be done with great care and speed, before the uterus closes itself upon them, otherwise, they occasion terrible hæmorrhages, faintings, and often inflammatory and putrid fevers.

SECURIDACA, in botany, a genus of plants, the corolla whereof is papilionaceous; the vexillum is roundish and very large; the alæ are obtuse, and the carina lunulated. The fruit is roundish, ending in a very large, oblong, obtuse, perpendicular membrane, broadest above; the seed is single, and is invested with the whole pericarpium. This plant taken inwardly is good for the stomach, and is an ingredient in antidotes used in a pefury

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fary with honey before coition, supposed to prevent conception.

SEDANTIA, SEDATIVE MEDICINES, in pharmacy, such medicines as are possessed of a power not only of composing, checking, and allaying the exorbitant and irregular motions of the solids and fluids, but also of alleviating and resolving the painful spasmodic strictures of the parts.

SE DEFENDENDO, in law, a plea used for him that is charged with the death of another, by alledging that he was under a necessity of doing what he did in his own defence; as that the other assaulted him in such a manner, that if he had not done what he did, he must have been in hazard of his own life. But it is necessary the danger should appear so great, as to be inevitable.

SEDIMENT, the settlement or drags of any thing, or that gross heavy part of a fluid body, which, upon resting, sinks to the bottom of the vessel.

SEDUM, in botany, a genus of plants, the corolla whereof consists of five acuminate, lanceolated, plane, patent petals; the fruit consists of five erecto-patent, acuminate compressed capsules, emarginated towards the base, and opening longitudinally upwards and downwards: the seeds are numerous and small. This genus comprehends the sedum, or house-leek, orpine, wall-pepper, and other species: all which agree in virtues with orpine. See *Orpine*.

SEED, a matter prepared by nature, for the reproduction and conservation of the species, both in animals and vegetables. Seed, in the animal œconomy, a white liquid matter separated from the blood in the testicles, and reserved for the purpose of generation. See *Generation*.

SEED, in botany, the product of a plant, whereby the species is propagated. The seed is frequently the fruit of the plant; sometimes it is only a part inclosed in the fruit, &c. Dr. Agricola tells us that there is inclosed in seeds a little germ or bud that composes the prime and most noble part of the whole; and which, according as some curious persons have calculated, hardly makes the thousandth part of the seed; but on this small part, the image and representation of the whole tree is perfectly delineated and expressed; and this principal part being any way hurt, spoiled, or lost, the seed, however large or otherwise perfect, will come to nothing, but

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will rot in the earth. In Malpighi's Life, p. 67, a debate may be seen between him and signior Triumphetti, whether the whole plant be actually in the seed: the affirmative is maintained by Malpighi with cogent arguments. And, as the perpetuity and safety of the species depend upon the safety of the seed and fruit in a great measure, nature hath taken peculiar care for the conservation and safety thereof; as particularly in such as dare to shew their heads all the year, how securely is their flower, seed, or fruit, locked up all the winter, together with their leaves and branches, in their germs, and well-fenced and covered there with neat and close tunics? And for such as dare not so expose themselves, with what safety are they preserved under the coverture of the earth, in their root, seed, or fruit, till invited out by the kindly warmth of the spring? And, when the whole vegetable race is thus called out, it is very curious to observe the methods of nature in guarding those insensitive creatures against harms and inconveniencies, by making some, for instance, to lie down prostrate, and others to close themselves up upon the touch of animals; and the most to shut up their flowers, their down, or other their like guard, upon the close or cool of the evening, for fear of rain, or other matters that may be prejudicial to the tender seed.

And to these considerations, relating to the seed, we might add the various ways of nature in dissipating and sowing it, some being, for this end, winged with light down or wings to be conveyed about by the winds; others being laid in elastic springy cases, that, when they burst and crack, dart their seed at convenient distances, performing thereby the part of a good husbandman; others, by their agreeable taste and smell, and salutary nature, inviting themselves to be swallowed, and carried about by the birds, and thereby also fertilized by passing through their bodies; and others, not thus taken care of, do many of them, by their usefulness in human life, invite the husbandman and gardener carefully to sow and nurse them up. Dr. Agricola says, the seeds of fruits, when separated from them, though not kept in the earth, will live fresh and healthy a great many years by means of its intrinsic spirit; but, when its grows very old, it is unfit for vegetation.

But,

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But, notwithstanding what some gardeners say, that some seeds are the better for being two or three years old; yet, he is of opinion that seed of one year old is best; for then the spirit is fresh and lively; the juices, which are the principle of nutrition and growth, are still susceptible of motion in the places of their residence; and the whole structure is in a good disposition.

The vegetative principle will indeed remain longer in one seed than in another, and in the long and round seed longer than in the flat and small seed; for that in the large and round seed, as well as in the oval, the juices circulate more freely by an interior motion, and have a greater circuit. And, besides that the juices are in them in greater abundance than in those that are small and flat, they can neither evaporate or dry so soon.

But, in those seeds that are very old, the juices are consumed and dried, and the organs are otherwise modified; and so the moving vegetative principle can act no longer for the fecundity of plants for the production of seeds.

Change of SEED, a term used by the farmers to express the common, and, as they suppose, necessary custom, of changing among one another the seed of their lands, as wheat, and the like; it being a received opinion, that the seed produced on one land will grow better on another, than on that which produced it, though the same species of plant be sown.

Seeds, in their natural climate, do not degenerate, unless culture has improved them; they then indeed are liable, upon omission of that culture, to return to their natural state again. Whatever benefit arises to the farmer from the changing the seed of the same species is from causes which are themselves the effects of different climates, such as heat and moisture, which may vary very much in the same neighbourhood. There is a mountain in the Mogul's country which on the south side produces Indian plants, and on the north side European ones, from different exposures. Some land retaining water longer is colder, and some letting it pass off quicker is warmer; as it may also be from the nature and figure of its parts, which retain more of the sun's heat than others. Sandy and gravelly grounds are always warmer than others, if they have some hollow and

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spongy stratum underneath, that will let the water pass off.

The benefit arising from the change of seed is owing to these changes, not to the change of food; and these causes shew their effects chiefly in the generation of the seed. Flax seed, brought from Holland, and sown here, will produce as fine flax as it does there, but, in the next generation, it will degenerate, and become coarser; by this means it will continue to degenerate every year, till after two or three years it is no better than our own seed produces, and yet the land shall be as good for this coarse sort, as when it produced the fine; so also it is, when the seeds of our own wheat are changed between farmer and farmer. And thus silk-worms hatched and bred in France of eggs brought from Italy, will make as fine silk as the Italian; but the eggs of those laid in France will produce worms that make no better silk than those produced in France, though their food is all the while the same.

Common barley, once sown in the burning sands in Wiltshire, will for many years after, if sown on indifferent warm ground, be ripe sooner than any other barley by two or three weeks; but, if sown on cold grounds farther north, it will be as late as any other barley, after two or three years. The weeds, which perplex the farmers in every field, grow as strong and troublesome one year as another, and that without any change of seed at all. These seem therefore to have been the natural produce of our soil, and corn and other useful plants to have been brought from other places, and improved by culture; these will therefore no longer retain their perfection and value, than such culture is continued to them.

Laurembergius has carried this notion of degeneracy and change from the soil, so far as to affirm that wheat will, in some places, degenerate into rye; and in other places, rye will be exalted into wheat by the soil: but those who are acquainted with botany know, that a horse might as soon be changed into a bull by feeding in an improper pasture, as one plant degenerate into another by fault of the soil. *Tull's Husbandry*.

SEEDLINGS, among gardeners, such roots of gillyflowers as spring from seed; also the young tender shoots of any plants that are newly sowed.

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SEEDY, in the brandy trade, a term used by the dealers to express a fault that is found in several parcels of French-brandy, which renders them unsaleable. The French suppose that these brandies obtain the flavour which they express by this name, from the weeds which grow among the vines, from whence the wine, of which this brandy was made, was pressed.

SEEING, the act of perceiving external objects by means of the eye, thence called the organ of sight.

SEELING, a term used by dealers in horses to denote a small spot of white hairs growing among the natural ones on the eye-brow; and which is a certain mark of old age. A horse is said never to see before he is fourteen, and always does so before he is sixteen.

SEGMENT of a circle, in geometry, a part of a circle, comprehended between an arch and the chord thereof.—Or it is a part of a circle less than a semicircle, comprehended between a right line, and a part of the circumference.

SEGMOIDAL Valves, in anatomy, small valves situated in the pulmonary artery, resembling segments of circles, whence they had their name.

SEIGNORAGE, a right or due belonging to a seigneur or lord. It also implies a right or due belonging to a prince for the coining of money.

SEIGNORY, a manor or lordship.

SEISIN, in law, implies possession; and is of two kinds; seisin in law, and seisin in fact. The former signifies something done, which the law accounts a seisin; as an enrollment, &c. And the latter an actual and corporal possession taken.

SEISURE, in commerce, implies the arresting some goods, merchandize, &c. either by express order of the sovereign, or in consequence of some law.

* **SELDEN**, John, a great lawyer, and one of the most learned and judicious critics of the 17th century, the son of Mr. John Selden, was born at Salvington in Suffex, the 16th of December, 1584. He was educated at the free-school at Chichester, whence he was sent to Hart-hall in the university of Oxford, where he continued four years. In 1612 he entered himself in Clifford's Inn, and about two years after removed to the Inner Temple, where he soon acquired great reputation by his learning. He had already published several of his works, and this year wrote verses in Latin,

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Greek, and English, upon Mr. William Browne's Britannia's Pastorals. In 1614 he published his Titles of Honour, and in 1616 his notes on Sir John Fortescue's book, *De Laudibus Legum Anglie*. In 1621 being sent for by the parliament, though not a member of that house, and giving his opinion very strongly in favour of their privileges, in opposition to the court, he was committed to the custody of the sheriff of London, but was set at liberty after five weeks confinement. In 1623 he was chosen burgess for Lancaster, but amidst all the divisions of the nation kept himself neuter, prosecuting his studies with such application, that though he was the next year chosen reader of Lyons Inn, he refused to perform that office. In 1625 he was chosen burgess for Great Bedwin in Wiltshire, to serve in the first parliament of king Charles I. in which he declared himself warmly against the duke of Buckingham; and on his grace's being impeached by the house of commons, was appointed one of the managers of the articles against him. In 1627 and 1628 he opposed the court party with great vigour. The parliament being prorogued to January 70, 1629, Mr. Selden retired to the earl of Kent's house at Wrest in Bedfordshire, where he finished his *Marmora Arundelliana*; and the parliament being met, he, among others, again distinguished himself by his zeal against the court, when the king dissolving the parliament, ordered several of the members to be brought before the king's bench bar, and committed to the Tower. Among these was Mr. Selden, who insisting on the benefit of the laws, and refusing to make his submission, was removed to the King's Bench prison, where being in danger of his life on account of the plague then raging in Southwark, he petitioned the lord high-treasurer at the end of Trinity term, to intercede with his majesty that he might be removed to the Gate-house, Westminster, which was granted: but in Michaelmas term following, the judges objecting to the lord treasurer's warrant, by which he had been removed to the Gate-house, an order was made for conveying him back to the King's Bench, whence he was released in the latter end of the same year; but fifteen years after the parliament ordered him 500*l*. for the losses he had sustained on this occasion. In 1634 a dispute arising between the English and Dutch concerning the herring

herring fishery on the British coast, he was prevailed upon by archbishop Laud to draw up his *Mare Clausum*, in answer to Grotius's *Mare Liberum*, which greatly recommended him to the favour of the court. In 1640 he was elected member for the university of Oxford. In 1643 he was appointed one of the lay members to sit in the assembly of divines at Westminster, and was the same year appointed keeper of the records in the Tower. In 1643 he was made one of the commissioners of the admiralty, and unanimously elected master of Trinity College, Cambridge, which last office he declined accepting. He died the 14th of December, 1654, in White-Friars, at the house of Elizabeth, countess dowager of Kent, and was interred in the Temple church, where a monument is erected to his memory. Dr. Wilks observes, that he was a man of uncommon gravity, and greatness of soul, averse to flattery, liberal to scholars, and charitable to the poor, and though he had great latitude in his principles with regard to ecclesiastical power, yet he had a sincere regard for the church of England. He wrote many learned works besides those already mentioned.

* SELEMNUS, in fabulous history, a beautiful shepherd, with whom the nymph Argyra became so enamoured, that she arose from the bottom of the sea to lie with him; but his beauty being at length decayed by time, she ceased visiting him, when dying with grief, Venus metamorphosed him into a river of Achæia, granted him the favour of forgetting that nymph, and gave his waters the virtue of making those who bathed in them forget the object of their affections.

SELENITE, moon-stone, in natural history, form a particular class of fossils of a rhomboidal, pellucid form, divisible into laminæ.

SELENOGRAPHY, that part of cosmography which relates to the moon. See *Moon*.

SELEUCIDÆ, a race of Grecian kings who reigned as successors of Alexander the Great in Syria.—Their establishment is a celebrated æra in chronology, called the Syro-Macedonian æra, or that of the Seleucidæ; and which, according to the best authors, began 12 years after the death of Alexander the Great, and 311 before Christ.

SELL, among builders, the lowest piece in timber-building, being that on

which the whole superstructure is raised. It is also applied by some to the bottom part of a window frame.

SELLA *Equina*, *Turcica*, or *Sphæroides*, in anatomy, imply the four apophyses of the os sphenoides in the brain. They have the name from their resembling a saddle, which the Latins called *sella*.

SELVAGE, among sailors, a sort of strop or wreath formed to fasten on any particular rope, whereby to hook a tackle. See *Tackle*.

SEMBRADOR, an instrument invented by Don Joseph De Lucatello, for the more evenly sowing of seeds, and in many particulars resemble the drill-plough of Mr. Tull.

SEMEIOTICA, that part of medicine which treats of the signs of health and diseases.

* SEMELE, in fabulous history, the daughter of Cadmus king of Thebes, and mother of Bacchus, being beloved by Jupiter, who had rendered her pregnant, Juno being enraged, accosted her in the form of Beroë, a decrepid old woman, that princess's nurse, and insinuating that she might be deceived in her lover, persuaded her to desire him, when he next courted the rites of love, as a proof of his divinity, to descend in the pomp of all his majesty, and encompassed by those celestial charms with which he embraced Juno. To this Semele consented, and having prevailed on Jupiter to swear by the river Styx that he would grant her request, made her demand. The god with reluctance complied, when the unhappy fair one, unable to bear the dazzling effulgence of the lightning with which he was encompassed, perished in his arms.

SEMEN. See *Seed*.

SEMETS, in botany, the same with antheræ. See *Antheræ*.

SEMI, a word borrowed from the Latin, which signifies half. It is used only in composition with other words.

SEMI-BREVE, in music, a note or measure of time, being equal to half a breve, three minims, four crotchets, &c.

SEMICIRCLE, in geometry, a figure comprehended between the diameter of a circle, and half the circumference.

SEMI-COLON, one of the stops used by grammarians to distinguish the different members of a sentence. It is marked thus (;) and implies a shorter pause than a colon, whence it has its name. See *Punctuation*.

SEMI-CUBICAL PARABOLA, a

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name given by mathematicians to a curve of the second order, wherein the cubes of the ordinates are in proportion to the squares of the abscissas.

SEMI-DIAMETER, half the diameter, or radius, being a line drawn from the center of a circle or sphere to its circumference. See the article *Radius*.

SEMI-DIAPENTE, in music, a false or defective fifth.

SEMI-DIAPASON, in music, a false or defective octave.

SEMI-DIATESSARON, in music, a defective or false fourth.

SEMI-FLOSCULOUS, in botany, implies the flowers of a class of flowers whose petals are hollow in the lower part, but in the upper flat, and continued in the shape of a tongue. The dandelion, hawkweed, &c. are of this kind.

SEMI-LUNAR VALVES, in anatomy, are three small membranous valves, of a semi-lunar figure, placed in the orifice of the pulmonary artery, to prevent the blood's flowing into the heart at the time of its dilatation.

SEMI-MEMBRANOSUS, a long thin membranous muscle, situated on the backside of the thigh, and arises from the tubercle of the ischium. It is one of the fluxors of the tibia.

SEMINAL, spermatic, or something belonging to the seed.

SEMINARY, in popish countries, a certain college appointed for the instruction and education of young persons destined for the sacred ministry. The first institution of such places is ascribed to St. Augustine. And the council of Trent decrees, that children exceeding twelve years of age shall be brought up, and instructed in common, to qualify them for the ecclesiastical function; and that there shall be a seminary of such belonging to each cathedral, under the direction of the bishop.

SEMINARY, in gardening, implies the seed-plot, or piece of ground allotted for raising plants from seed, and keeping them till they are fit to be removed into the garden or nursery.

SEMINATION, in agriculture, the act of sowing, or scattering the seed.

SEMI-NERVOSUS, half nervous, in anatomy, a muscle arising from the protuberance of the ischium, and inserted, by a round tendon, into the internal part of the epiphysis of the tibia, and helps to bend the leg.

SEMI-ORDINATE, half of an ordinate.

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SEMI-QUAVER, in music, a note whose length is equal to half a quaver.

SEMI-SPINALIS, *Collis*, in anatomy, a name given to all that fleshy mass which lies between the transverse and spinal apophysis, from the second vertebra of the neck to the middle of the back; the splenius and the complexus major, which cover it, having been raised. It is composed of several oblique converging muscles, which may be divided into external and internal; and of these the external are the longest.

SEMITA LUMINOSA, a name given by astronomers to a lucid tract in the heavens, visible about six o'clock at night, a little before the vernal equinox. It extends from the western edge of the horizon up towards the Pleiades.

Cassini was of opinion that this lucid tract was owing to a vast number of planets encompassing the sun, whose light they reflected.

SEMPERVIVUM, houseleek, the name of a well-known plant, which is used in medicine as a cooler.

SENA, the leaf of an annual, woody, pod bearing plant, brought dry from Alexandria in Egypt. It is of a lively yellowish green colour, an oblong somewhat oval figure, sharp-pointed at the ends, about a quarter of an inch broad, and not a full inch in length. Some inferior sorts are brought from Tripoli and other places: these may be distinguished, by their being either narrower, longer, and sharp-pointed, or larger, broader, and round-pointed, with small prominent veins; or large, obtuse, and of a fresh green colour, without any yellow cast. Sena is a moderately strong, and in general a safe cathartic: Geoffroy specifies hæmorrhages, inflammations of all kinds, and disorders of the breast, as being almost the only exceptions to its use. The dose in substance is from a scruple to a dram; in infusion, from one dram to three or four. It gives out its virtue both to watery and spirituous menstrua: to water and proof spirit it communicates a brownish colour, more or less deep according to the proportions; to rectified spirit, a fine green. There are two inconveniences often complained of in this medicine; its being liable, in some constitutions, to occasion gripes; and its being accompanied with an ill flavour, which is apt to nauseate both the stomach and the palate. The first may be obviated by dilution, the latter by aromatic and other additions;

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additions: several compositions of this kind are prepared in the shops, both sufficiently palatable, and which operate with ease and mildness.

Six drams of tamarinds and two of crystals of tartar are boiled in a pint and a half of water, till half a pint is wasted, and the strained liquor poured boiling hot upon one, two, or three drams of senna: after maceration for four hours, the strained infusion is sweetened with an ounce of syrup of violets, and flavoured with half an ounce of simple cinnamon-water. Three drams of senna are infused in a quarter of a pint of boiling water, for four hours, or till the liquor has grown cold; with the addition of a scruple of ginger, or with half a dram of lesser cardamum seeds husked, and three fourths of a dram of crystals of tartar, which last are previously boiled in the water till dissolved; or with two drams of fresh lemon-peel, and two drams by measure of lemon-juice. The committee of the London college observe that this last is the most agreeable form they have been able to contrive, for the exhibition of senna to those who are more than ordinarily offended with its flavour; and that though acids are generally supposed to impede the action of water on vegetables, yet the infusions of senna made with acids are found, from experience, not to fail in their intention. Indeed, if the acids really weaken the dissolving power of the water, which it is probable they do in some degree, they should seem to be, on this account, rather of advantage than otherwise; for, as the committee further observe, in a medicine very nauseous to many, it is of primary consequence that only the lighter and least disgusting parts be extracted. On this principle, some macerate the senna for a night in cold water, which becomes sufficiently impregnated with its purgative virtue, without extracting so much, as boiling water does, of the nauseous matter: if the liquor, poured off from the senna, be boiled a little by itself, great part of its ill flavour will be dissipated; and the remains of its offensiveness may be effectually covered by infusing in it some bohea tea. If the decoction is continued for any considerable time, the purgative virtue of the senna will be diminished; for the inspissated watery extracts are scarcely found to purge so much as one fourth of the infusion or decoction they were made from, or so much as an equal weight of the leaves in substance.

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The officinal spirituous tincture of senna are prepared by digestion for some days with or without heat, in proof spirit. The proportions, in the London Pharmacopœia, are, one dram of senna to an ounce and a quarter of the spirit, to which are added a dram and a quarter of stoned raisins, seven grains and a half of caraway-seeds, and two grains and a half of lesser cardamum seeds husked: in the Edinburgh, half a dram of senna to an ounce and a half of the spirit, with the addition of fifteen grains of rhubarb, seven grains and a half of shavings of guaiacum, the same quantity of sweet fennel seeds, the same of juniper-berries, and forty-five grains of white sugar-candy in powder; which last is directed to be dissolved in the tincture, after straining it from the other ingredients. Both these tinctures are agreeable and useful cathartic purgatives, especially to those who have accustomed themselves to spirituous liquors; the ill flavour of the senna is completely covered, and its offending the stomach or producing gripes prevented, by the warm seeds and the sweets. The guaiacum, in the second prescription, promotes the operation of the senna; for two drams of senna, infused in half a pint of a decoction of guaiacum, purge as briskly as three drams infused in plain water, and with greater ease to the patient. Several compositions of this kind have been offered to the public, under the name of Daffy's Elixir: the above two are inferior to none, and superior to most of them.

SENATE, an assembly, or council of senators; that is, of the principal members of a state, who have a share in the government.

SENATOR, a member of a senate.

SENDING, in the sea-language, the act of pitching or plunging headlong with the ship's fore-part. See *Pitching*.

* SENEGAL, or SENEGA, a kingdom of Negroland, in Africa, seated on a river of the same name, which some suppose to be a branch of the Niger. However, it overflows like the Nile, and about the same time of the year. It is forty days before it comes to the height, when the river overflows its banks, and the channel is difficult to find by those who go up in boats. The French once sent thirty men up this river, who rowed a thousand miles, undergoing great hardships and hazards, inasmuch that only five returned back alive: their boat once stuck fast on the tops of trees, and they got

get it off with great difficulty. The kingdom of Senegal was formerly very considerable, but is now reduced into a very narrow compass: it is populous and full of trees, but the soil is sandy and barren; for which reason they never sow till the rainy season comes on in June; and they get in their harvest in September. The French had a fort and factory in an island at the mouth of this river, and they were entire masters of the gum-trade. It is called Fort Louis, and was taken by the English on the 11th of May 1758, and ceded to Great Britain by the peace of 1763. One Thomas Cumming, a Quaker, was instrumental in taking this fort, for which he had a pension of five hundred pounds *per annum* granted him upon the Irish establishment.

SENGREEN, in botany, the same with *Sempervivum*. See *Sempervivum*.

SENNA. See *Sena*.

SENNAT, among sailors, a sort of braided cordage formed by the plating of five, seven, or nine rope-yarns into one another: it is employed for various uses in a ship, particularly to form netting. &c. See *Netting*.

SENSATION, the act of perceiving external objects, by means of the organs of sense. To conceive the manner wherein sensation is affected, observe, that all the organs consist of little filaments, or nerves, which have their origin in the middle of the brain, are diffused thence throughout all the members which have any sense, and terminate in the exterior parts of the body: that when we are in health, and awake, one end of these nerves cannot be agitated or shaken, without shaking the other, because they are always a little stretched; as in the case of an extended chord, one part of which cannot be stirred without a like motion of all the rest.

It is to be likewise observed, that these nerves may be agitated two ways, either at the end out of the brain, or that in the brain. If they be agitated from without, by the action of objects, and their agitation be not communicated as far as the brain; as frequently happens in sleep, when the nerves are in a state of relaxation, the soul does not then receive any new sensation. But if the nerves happen to be agitated in the brain, by the flux of the animal spirits, or any other cause, the soul perceives something, though the parts of those

nerves, that are out of the brain, diffused through the several parts of the body, remain at perfect rest; as likewise is frequently the case in sleep. Lastly, observe, that experience tells us, we may sometimes feel pain in parts of the body that have been entirely cut off, by reason of the fibres in the brain corresponding to them being agitated in the same manner as if they were really hurt; the soul feels a real pain in those imaginary parts. All these things seem to shew, that the soul resides immediately in that part of the brain wherein the nerves of all the organs of sense terminate: we mean, it is there it perceives all the changes that happen with regard to the objects that cause them, or that have been used to cause them; and that it only perceives what passes out of this part by the mediation of the fibres terminating in it.

These things premised, it will not be difficult to explain how sensation is performed: the manner of which may be conceived from what follows. When the point of a needle, for instance, is thrust against a hand, that point stirs and separates the fibres of the flesh, which fibres are extended from that place to the brain, and when we are awake, are in such a degree of tension, as that they cannot be stirred without shaking those of the brain. If then the motion of the fibres of the hand be gentle, that of the fibres of the brain will be so too; and, if the first be violent enough to break any thing in the hand, the last will be stronger and more violent in proportion. In like manner, if the hand be held to the fire, the little particles of the wood it throws off in great numbers, and with a great deal of violence, striking against these fibres, and communicating a part of their agitation thereto; if the action be moderate, that of the extremities of the fibres of the brain, corresponding to those of the hand, will be moderate likewise: if it be violent enough to separate any of the parts of the hand, as it happens in burning; the motion of the fibres in the brain will be proportionably more violent. This is what befalls the body, when objects strike upon it. We are now to consider how the mind is affected. The mind we have observed, resides principally, in that part of the brain where all the fibres of the nerves terminate. It attends here, as its sensory, or office, to look to the preservation of all the

the parts of the body; and, of consequence, must be here adverted of all the changes that happen, and must be able to distinguish between those agreeable to the constitution of the body, and those hurtful thereto. Any other absolute knowledge, without a relation to the body, were useless. Thus, though all the changes in our fibres do, in reality, consist in motions, which ordinarily only differ as to more and less, it is necessary the soul should consider them as changes essentially different; for though in themselves they differ but very little, yet, with regard to preservation of the body, they are to be looked on as essentially different.

The motion, for instance, which causes pain, frequently differs exceeding little from that which occasions a pleasing titillation: it is not necessary there should be an essential difference between these two motions; but it is necessary there be an essential difference between the pain and the tickling, which those two motions occasion in the soul; for the agitation of the fibres, which accompanies the titillation, informs the soul of the good state of the body, that it is able to resist the impression of the objects, and that it need not apprehend its being hurt: but the motion which occasions pain, being somewhat more violent, is capable of breaking some of the fibres of the body; wherefore it is necessary the soul be adverted hereof by some disagreeable sensation, that it may provide against it. Thus, though all the motions which pass in the body only differ in themselves, as to more or less, yet, when considered with regard to the preservation of life, they may be said to be essentially different; for this reason it is, that the soul does not perceive the shakes, or motions themselves, which objects excite in the fibres of the flesh: it would be useless to perceive them; and she would never be able, thence, to learn whether the objects were capable of doing hurt or good. But she perceives herself affected with sensations, which differ essentially, and which shewing precisely the qualities of the objects, as they regard the body, make her perceive distinctly, whether or no those objects are capable of hurting it. In effect, from strict examination of the several senses, it appears, that sensible objects act no otherwise upon the body, for the producing of sensation, than by exciting a change in the extreme surface of the fibres of the nerves: the quality of which change depends on the figure, bulk,

hardness, and motion of the object; so that, according to all appearance, the most different objects, which should agree in these four circumstances, would produce the same sensation. From the various texture of the object, the diversity of the nerve affected, the different fabric of the organ of sense, the different place in the medulla of the brain where the nerve arises, and the different degree of motion wherewith the action of the object is applied, cause various sensations and ideas in the mind; none of which represent any thing in the action of the object, or in the passion of the organ. And yet the same action of the same object on the same organ, always produces the same sensation or idea: and the same ideas necessarily follow the same disposition of the same sensible organ, in the same manner as if the idea perceived were the natural and necessary effect of the action on the organ.

SENSE, a faculty of the soul whereby it perceives external objects, by means of some impression made in the organs of sense. Some use of the word sense in a greater latitude, and define it a faculty whereby the soul perceives ideas or images of objects, either conveyed to it from without, by the impression of objects themselves, or excited within by some effort of the soul of the sensory itself. Under which notion, sense becomes distinguishable into two kinds, external and internal: corresponding to the two several manners wherein the images of the objects perceived are occasioned, and presented to the mind, viz. either immediately from without, or from within; that is, either by what we commonly call the five external senses; hearing, seeing, &c. or by the internal ones, imagination, memory, and attention; to which some add hunger and thirst. But these internal senses are not ordinarily considered in the notion of senses, nor implied under the word sense; but are thus only denominated by analogy.

The means, on the part of the mind, are always the same; it being one and the same faculty, whereby we see, hear, &c.—The means on the part of the body, are different; as different as are the objects we are concerned to perceive: for, the being and well-being of the animal being the end nature had in view in giving him any preception of external bodies, by this, the measure and manner of that preception is regulated: and we have so many ways of perceiving, and of per-

perceiving so many things, as the relation we bear to external bodies renders necessary for the preservation, &c. of our being. Hence those several organs of sense, called eye, ear, nose, palate, and the universal one cutis; each of which is so disposed as to give some representation and report to the mind of the state of external things, the nearness, convenience, hurtfulness, and other habitudes; and each of them a different one, according to the degree, and immediateness, &c. of the danger, or conveniency. And hence the several exercises of those organs, hearing, seeing, smelling, tasting, and feeling.

A late excellent author gives us a more ingenious, extensive, and philosophical notion of sense.—On his principle, sense is defined a power of perception, or a power of receiving ideas; if what is absolutely passive may be properly called a power. On some occasions, instead of power, he chuses to call it a determination of the mind to receive ideas.—The ideas thus perceived, or raised in the mind, he calls sensations. Sense he considers, either as natural or moral: and the natural, either as external or internal; though the distribution is chiefly founded on the common way of conceiving; for, in reality, they appear to be all natural and necessary: some reasons, however, for the distinction, will be shewn under the several articles thereof.

External SENSES, the means whereby the soul takes cognizance of external objects. They are commonly reckoned five in number, five, viz. the eye, ear, nose, palate, and cutis, or skin. External senses, then, are powers of perceiving ideas, upon the presence of external objects.—On such occasions, we find the mind is merely passive, and has not power directly to prevent the perception, or idea, or to vary it at its reception; as long as the body is continued in a state fit to be acted upon by the external object.

When two perceptions are intirely different from each other, or agree in nothing but the general idea of sensation; the power of receiving those different perceptions is called different senses. Thus seeing and hearing denote the different powers of receiving the ideas of colours and sounds. And though colours, as well as sounds, have vast differences amongst themselves, yet is there a greater agreement among the most opposite colours, than between any colour and a

sound; and hence all colours are deemed perceptions of the same sense. All the several senses seem to have their distinct organs, except feeling, which is, in some degree, diffused over the whole body.

Internal SENSES, are powers or determinations of the mind to be pleased with certain forms and ideas, which occur to our observation in objects perceived by the external senses.

Of these there are two different species, distinguished by the different objects of pleasure, viz. pleasurable or beautiful forms of natural things, and pleasurable or beautiful actions, or characters of rational agents; whence the internal senses become divisible into natural and moral: though what we call the internal natural sense, our author calls simply, and by way of eminence, the internal sense.

In reflecting on our external senses we plainly see, that our perceptions of pleasure and pain do not depend directly on our will. Objects do not please us according as we incline they should; the presence of some objects necessarily pleases us, and the presence of others as necessarily displeases us; nor can we, by our will, any otherwise procure pleasure, or avoid pain, than by procuring the former kind of objects, and avoiding the latter. By the very frame of our nature, the one is made the occasion of delight, and the other of dissatisfaction. In effect, our sensitive perceptions are pleasant and painful, immediately, and without any knowledge of the cause of this pleasure and pain, or of the manner how they excite it, or are occasions of it, or without seeing to what further advantage or detriment the use of such objects might tend. Nor would the most accurate knowledge of these things vary either the pleasure or the pain of the perception; however, it might give a rational pleasure distinct from the sensible; or might raise a distinct joy, from prospect of further advantage in the object, or aversion, from apprehension of evil. There is scarce any object, which our minds are employed about, but is constituted the necessary occasion of some pleasure or pain. Thus we shall find ourselves pleased with a regular form, a piece of architecture or painting, a composition of notes, a theorem, an action, and affection, a character; and we are conscious that this pleasure naturally arises from the contemplation of the idea then present in the mind,

mind, with all its circumstances, though some of those ideas have nothing of what we call sensible perception in them; and, in those which have, the pleasure arises from some uniformity, order, arrangement, imitation; and not from the simple ideas of colour, or sound, or mode of extension separately considered.

It seems hence to follow, that, when instruction, education, or prejudice of any kind, raise any desire or aversion towards an object, this desire, or aversion, is founded on an opinion of some perfection, or deficiency, in those qualities, for perception whereof we have the proper senses. Thus, if beauty be desired by one who has not the sense of sight; the desire must be raised by some apprehended regularity of figure, sweetness of voice, smoothness, softness, or some other quality perceivable by the other senses, without relation to the ideas of colour.

The only pleasure of sense, which our philosophers seem to consider, is that which accompanies the simple ideas of sensation; but there are vastly greater pleasures in those complex ideas of objects, which obtain the names of beautiful and harmonious. The power, then, whereby we receive ideas of beauty and harmony, has all the characters of sense. It is no matter, whether we call these ideas of beauty and harmony perceptions of the external senses of seeing and hearing, or not: we should rather chuse to call these ideas an internal sense, were it only for such convenience of distinguishing them from other sensations of seeing and hearing, which men may have without perception of beauty and harmony.

Moral SENSE, a determination of the mind, to be pleased with the contemplation of those affections, actions, or characters of rational agents, which we call good or virtuous. This moral sense of beauty, in actions and affections, may appear strange at first view: some of our moralists themselves are offended at it in my lord Shaftesbury, as being accustomed to deduce every approbation, or aversion, from rational views of interest. Our gentlemen of good taste can tell us of a great many senses, tastes, and relishes for beauty, harmony, imitation in painting and poetry; and may we not find, too, in mankind, a relish for a beauty in characters, in manners? The truth is, human nature, does not seem to have been left quite indifferent, in the affair of virtue, to form to itself observations concerning the advantage or disadvantage of actions, and accordingly to regulate its conduct. The

weakness of our reason, and the avocations arising from the infirmity and necessities of our nature, are so great, that very few of mankind could have framed those long deductions of reason, which may shew some actions to be, in the whole, advantageous, and their contraries pernicious. The author of nature has much better furnished us for a virtuous conduct, than our moralists seem to imagine, by almost as quick and powerful instructions, as we have for the preservation of our bodies; he has made virtue a lovely form, to excite our pursuit of it, and has given us strong affections, to be the springs of each virtuous action.

SENSITIVE SOUL, a denomination given to the souls of brutes, or that which man is by some supposed to have in common with brutes.

SENSITIVE PLANT, in Botany, a plant whose frame and constitution is so nice and tender, that on the touch or least pressure of the hand it will contract its leaves, as if sensible of the touch.

SENSORY, the seat of the common sense, or what receives the impressions of all sensible objects, conveyed to it by the nerves of each particular organ, and consequently the immediate cause of perception. This office is by Dr. Wills attributed to the striated part of the brain, and by Des Cartes to the glandula pinealis.

SENTENCE, in law, a judgment passed in court by the judge on some process, either civil or criminal.

SENTENCE, in grammar, a period or set of words comprehending some perfect sense or sentiment of the mind.

SENTENCE, in poetry, an instructive and lively remark made on something very observable, and agreeably surprising, which contains much sense in few words.

SENTIMENTS, in poetry, and especially dramatic, are the thoughts which the several persons express, whether they relate to matters of opinion, passion, business, or the like.

SENTINEL, CENTINEL, or CENTRY, in military affairs, a private soldier placed in some post to watch any approach of the enemy, to prevent surprises, and to stop such as would pass without order, or discovering who they are.

SEPARATING GLASS, in chemistry, a receiver having a spout at the bottom, for separating oil from water, in distillation.

SEPTEMBER, the seventh month of the year, reckoning from the vernal equinox, or the ninth from January.

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SEPTENTRIO, in astronomy, a constellation more usually called *ursa minor*.

SEPTICS, among physicians, an appellation given to all such substances as promote putrefaction.

From the many curious experiments made by Dr. Pringle, to ascertain the septic and antiseptic virtue of natural bodies, it appears that there are very few substances of a truly septic nature. Those commonly reputed such by authors, as the alkaline and volatile salts, he found to be no wise septic. However, he discovered some, where it seemed least likely to find any such quality; these were chalk, common salt, and the testaceous powders. He mixed twenty grains of crab's eyes prepared with six drams of ox's gall, and an equal quantity of water. In another phial he put an equal quantity of gall and water, but no crab's eyes. Both these mixtures being placed in the furnace, the putrefaction began much sooner where the powder was, than in the other phial. On making a like experiment with chalk, its septic virtue was found to be much greater than that of the crab's eyes: nay, what the doctor had never met with before, in a mixture of two drams of flesh with two ounces of water, and thirty grains of prepared chalk, the flesh was resolved into a perfect mucus in a few days. To try whether the testaceous powders would also dissolve vegetable substances, the doctor mixed them with barley and water, and compared this mixture with another of barley and water alone. After long maceration by fire, the plain water was found to swell the barley, and turn mucilaginous and sour; but that with the powder kept the grain to its natural size, and though it softened it, yet made no mucilage and remained sweet. Nothing could be more unexpected, than to find sea-salt a hastener of putrefaction, but the fact is thus; one dram of salt preserves two drams of fresh beef in two ounces of water, above thirty hours uncorrupted, in a heat equal to that of the human body; or, which is the same thing, this quantity of salt keeps flesh sweet 20 hours longer than pure water. But then half a dram of salt does not preserve it above two hours longer. Twenty-five grains have little or no antiseptic virtue, and ten, fifteen, or even twenty grains manifestly both hasten and heighten the corruption. The quantity, which had the most putrefying quality, was found to be about ten grains to the above proportion of flesh and water.

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Many inferences might be drawn from this experiment. One is, that since salt is never taken in aliment beyond the proportion of the corrupting quantities, it would appear that it is subservient to digestion, chiefly by its septic virtue, that is, by softening and resolving meats; an action very different from what is commonly believed. It is to be observed, that the above experiments were made with the salt kept for domestic uses. *Pringle's Observ. on Dis. of the Army.*

SEPTUAGESIMA, in the calendar, the third Sunday before Lent.

The word is formed from the Latin, *septuaginta*, seventy; because about seventy days before Easter.

SEPTUAGINT, LXX, or *The Seventy*, the name of a famous version of the Old Testament, out of Hebrew into Greek, performed by seventy-two Jewish interpreters, in obedience to an order of Ptolemy Philadelphus. This version was in use at the time of our Blessed Saviour, and is that out of which all the citations in the New Testament, from the original Greek of the Old, are taken. It was the ordinary and canonical translation made use of by the Christian church in the earliest ages; and it still subsists in the churches both of the East and West. The history of this version is expressly written by Aristæas, an officer of the guards to Ptolemy Philadelphus.

Philo tells us, that the Jews of Egypt were so transported upon the making this translation of the Scriptures into Greek, that they kept an annual feast in memory of it; at which time they went into the Isle of Pharos, and performed their devotions, out of respect to a place, which had been sanctified by the presence of the seventy interpreters. On the contrary, the Jews of Palestine conceived so much contempt and abhorrence for this version, that they fasted on the eighth day of Thebet, to shew how much they disapproved the liberty that had been taken in translating the law into a foreign and impure language. We shall subjoin M. Rollin's reflection on this translation of the Bible into Greek. "This version, which made the scriptures intelligible to an infinite number of people, was one of the most considerable fruits of the Grecian conquests: and it appears plainly to have been a part of the principal design, which God had in delivering all the East into the hands of the Greeks, and supporting them therein, notwithstanding the divisions, jealousies, battles, and the frequent revolutions that happened among them."

them. God by this means prepared an easy way for the preaching of the gospel, which was near at hand, and more readily united so many nations, different both in language and manners, in one society, in the same worship, and in the same doctrine, by one language, the most elegant, copious, and correct, that was in the world, and which became common to all the countries conquered by Alexander."

Chronology of the SEPTUAGINT, an account of the years of the world, very different from what is found in the Hebrew text and the Vulgate, making the world 1466 years older than these latter.

SEPTUM, a Latin word, literally signifying a partition or inclosure, and in anatomy, is applied to several parts of the body, which serve to separate one part from another.

SEPULCHRAL, belonging to sepulchres, or tombs.

SEPULCHRE, a tomb or place destined for the interment of the dead. It is chiefly used in speaking of the burial-places of the ancients: those of the moderns are usually called tombs.

Knights of the Holy SEPULCHRE, a military order, established in Palestine, about the year 1114.

SEQUEL, in logic, a consequence drawn from some preceding proposition.

SEQUESTRATION, in common law, the act of separating a thing in controversy from the possession of both parties, till the right be determined by course of law.

SEQUIN, ZECHIN, or ZECCHINO, a gold coin struck at Venice, and several parts of the Grand Signior's dominions, particularly at Cairo. The value of these sequins is different, those of Venice exceeding these of Turkey, by nearly one fifteenth part.

SERAGLIO, among the Orientals, the palace of a prince or lord, but it is used by way of excellence for the palace of the Grand Signior at Constantinople.

SERAPH, or SERAPHIM, in theology, a spirit of the first or highest rank.

SERAPHIC, burning or inflamed with love or zeal, like a seraphim: thus St. Bonaventure is called the seraphic doctor, from his abundant zeal and fervor.

SERENADE, a kind of concert given in the night, by a lover to his mistress under her window.

SERENE, a quality or title of honour, given to certain princes and chief magistrates of republics.

SERGE, in commerce, a woollen stuff manufactured in the loom, the warp of which is composed of the longest, and the woof of the shortest wool.

SERGEANT *at Law*, the highest degree taken in the common law, as that of doctor is in the civil law.

SERGEANT *at Arms*, an officer appointed to attend the person of a king, arrest traitors and persons of quality offending, and to attend the lord steward when he sits in judgment on any traitor.

SERGEANT, or SERJEANT, in the army, an inferior officer in a company of foot, or troop of dragoons, armed with a halbert, and appointed to see discipline observed, to teach the soldiers the exercise of their arms, to see due distance kept, to form ranks, files, &c.

SERGEANTRY, or SERJEANTRY, in law, is taken for a service that cannot be due from a tenant to any other lord besides the king.

SERIES, a continued succession of things in the same order, and which have some relation or connection with each other.

SERIES, in algebra, a rank or progression of quantities, increasing or decreasing, in some constant ratio: which, in its progress, approaching still nearer and nearer some sought value, is called a converging series, and, if infinitely continued, becomes equal to that quantity; whence the usual appellation of infinite series. See *Progression*.

The method of series took its rise from the learned Dr. Wallis's Arithmetic of Infinites, and has of late been so pursued by the greatest mathematicians, that it is now one of the greatest improvements in algebra.

Nature and Use of infinite SERIES.—Tho' arithmetic furnishes us with very adequate and intelligent expressions for all rational numbers, yet it is very defective as to irrational ones, which are infinitely more numerous than the other; there being, for instance, an infinity of them between one and two, were it now required to find a mean proportional between 1 and 2, in rational numbers, which alone are clearly intelligible (the root of 2 being certainly a very obscure idea) we could still approach nearer and nearer to the just value of the quantity required, but without ever arriving at it: thus, if for the mean proportional between 1 and 2, or the root of 2, we first put 1, it is evident we have not put enough; if we add $\frac{1}{2}$, we put too much, for the square

of $1 + \frac{1}{2}$ is greater than two. If then we take away $\frac{1}{2}$, we shall find we have taken away too much, and if we return $\frac{1}{2}$, the whole will be too great: thus may we proceed, without ever coming at the just quantity sought.—These numbers thus found, and those found after the same manner to infinity, being disposed in their natural order, make what we call an infinite series.

To find a SERIES expressing a Quantity sought by Division. Divide the dividend by the divisor, as in common algebra, continuing the division till the quotient shew the order of progression, or the law, according to which the terms proceed to infinity.

SERMONES, the title Horace gives to his Satires. The critics are divided about the reason of the name. The opinion of father Bossi seems well grounded; a mere observation of feet and measure, such as we find in Plautus, Terence, and Horace's Satires, he thinks, is not sufficient to constitute verse; to determine the work to be poetical, or distinguish it from prose; unless it have some farther air or character of poetry, somewhat of the fable, or sublime. Hence it is that Horace calls his satires prose sermons.

SERMONS, orations, or discourses delivered by the clergy of the Christian church, in their religious assemblies. In the ancient church, immediately after the reading of the psalms, and lessons out of the scriptures, before the catechumens were dismissed, followed the sermon, which the bishop, or some other appointed by him, made to the people. This being done in the presence of the catechumens, was therefore reckoned a part of the *missa catechumenorum*, or ante-communion service. Such discourses were commonly termed homilies, *homiliae*, which signifies indifferently any discourse of instruction to the people. Preaching, anciently, was one of the chief offices of a bishop; inasmuch, that in the African churches, a presbyter was never known to preach before a bishop in his cathedral church, till St. Austin's time. In the Eastern church, presbyters were indeed allowed to preach before the bishop; but this was not to discharge him of the duty, for still he preached a sermon at the same time after them. In the lesser churches of the city and country, the office of preaching was devolved upon the presbyters; but deacons never were allowed to perform it. There are numberless passages in the writings of the fathers, which speak of preaching as a duty indispensa-

bly incumbent on a bishop. Many canons of councils either suppose, or enjoin it: and, in the imperial laws, there are several edicts of the secular power to the same purpose. It has been a question, whether laymen were ever allowed by authority to make sermons to the people. It is certain, they did it in a private way, as catechists, in their catechetical schools at Alexandria, and other places; but this was a different thing from public preaching in the church. Sometimes the monks, who were only laymen, took upon them to preach, but this was censured, and opposed, as an usurpation of an office that did not belong to them. Yet, in some cases, a special commission was given to a layman to preach: as in the case of Origen, who was licensed by Alexander, bishop of Jerusalem, to preach and expound the scriptures in the church, before he was in orders. As to women, whatever gifts they could pretend to, they were never allowed to preach publicly in the church; agreeably to the apostolic rule, "Let your women keep silence in the churches, &c." But they might teach those of their own sex, as private catechists, and prepare them for baptism. And this was the office of the deaconesses. The Montanists were a noted sect for giving the liberty of preaching to women, under the pretence of inspiration by the spirit; for they had prophetesses, women-bishops, and women-presbyters. Next to the persons, the manner in which the office of preaching was executed, comes to be considered. And first it is observable, that they had sometimes two or three sermons preached in the same assembly, first by the presbyters, and then by the bishops. When two or more bishops happened to be present in the assembly it was usual for several of them to preach, one after another, reserving the last place for the most honourable person. In some places they had sermons every day, especially in Lent, and the festival days at Easter. In many places they had sermons twice a day, for the better edification of the people. But this is chiefly to be understood of cities and large churches; for in the country parishes there was not such frequent preaching.

The next thing to be observed is, their different sorts of sermons, and different way of preaching. These are distinguished into four kinds: 1. Expositions of scripture. 2. Panegyric discourses upon the saints and martyrs. 3. Sermons upon particular times, occasions and festivals. 4. Sermons upon particular doctrines, or moral

moral subjects. There are examples of all these kinds in St. Crystostom's and St. Austin's homilies, the two great standards of preaching, in the Greek and Latin churches. But, though most of these were studied and elaborate discourses, penned and composed before hand, yet some were also extempore, spoken without any previous composition, and taken down in short-hand from the mouth of the preacher. Origen was the first that began the way of extempore preaching in the church.

Upon this account it was usual for the preacher to utter in his discourse with a short prayer, for divine assistance. In this sense we are to understand St. Crystostom, when he says, "We must first pray, and then preach." Some times, before they began to preach, they used the common salutation, *Pax vobis*, Peace be with you; to which the people answered, And with thy spirit. And sometimes they prefaced the sermon with a short form of benediction, especially in times of calamity and distress, or of happy deliverance out of them. Sometimes they preached without any text, and sometimes upon more texts than one. Neither did they entertain their auditory with light and ludicrous matters, or fabulous and romantic stories, such as those with which preaching so much abounded in the age before the Reformation.

The Roman catholics call the sermon, the prone. After the gospel, the preacher goes to the bottom of the steps of the altar, on the epistle side, where he kneels down, and offers prayers to God for the action he is going about. Then he ascends the pulpit; where he first bows to the cross, and then to the chief of the congregation. He likewise crosses himself; and, whenever he pronounces the name of Jesus and Mary, he takes off his cap, and bows. In Italy, he does the same thing, whenever the reigning pope is named in the sermon. Before the bishop, or when the holy sacrament is solemnly exposed on the altar, it is usual to preach bare-headed. The manner of preaching in Italy is very indecent, the behaviour of the preachers being like that of stage-dancers: they are extravagant in their gestures, they strike with their hands and feet, roll their eyes, and walk from one end of the pulpit, which is very long and wide, to the other, with immoderate and ridiculous vivacity. Their finest sermons, says a celebrated traveller, are those that raise the most laughter. "The Capuchins, adds he, never preach, but on terrible subjects; they seize their

own beards, clap their hands, and scream enough to fright one. The other day, I heard a Carmelite, who was preaching to the repentant nuns of the holy cross, on the subject of Mary Magdalen. In order to raise a more exalted idea of the sacrifice his penitent had made of the pleasures of the world, he spent a whole quarter of an hour in painting her out as the most charming creature under heaven: not one feature, in the most perfect body, was omitted; and he talked more like a most accomplished painter, than a preacher." In Italy, there are seldom any sermons, but in the time of Advent and Lent. The friars preach in their convents upon topics which we may call eternal; for they seldom lose sight of their founders, or of some particular practices, which they are fond of, such as the rosary, and scapulary, and St. Francis's girdle. In some cities of Italy, are itinerant preachers, who carry about with them little moveable pulpits.

In Spain they often preach in the public squares and high streets, and seldom fail of a numerous audience. The preachers take great pains to affect their hearers, and to this end they frequently strike their breast or face, and the whole congregation does the same thing. They who draw most tears are thought the best preachers.

SERON of Almons, is the quantity of 200 weight; of anise-seeds, from 3 to 400; of Castile-sope, from 200 and a half to 300 and 3 quarters.

SEROSITY, in medicine, an aqueous liquor, or lymph, found in the blood, and other humours.

SERPENS, in astronomy, a constellation of the northern hemisphere, called more particularly, Serpens Ophiuchi. The stars of this constellation in Ptolemy's catalogue are 17, in Tycho's 19, and in Mr. Flamsteed's 59.

SERPENT, in zoology, the name of a genus of animals, which Mr. Ray defines to be creatures breathing by means of lungs, having only one ventricle in the heart, having no feet, and having a long body, covered with scales. To which he adds, that in cold seasons they can bear hunger a long time. The greater part of the serpent class are poisonous, and dangerous in their bite, leaving a mischievous liquor in the wound, made by their tooth, which, mixing by this means immediately with the blood, is of fatal consequence; though the whole creature may be eaten with safety, or even the poisonous liquor, which does
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this mischief in the wounded, tasted without hurt. Notwithstanding that serpents respire by means of lungs, they do not take in and discharge their breath by such short intervals as other animals, but what they have once inspired will serve them a long time; for as they are of a cold nature, and therefore their natural warmth very small, they do not require such an eternally renewed supply of that pabulum of vital heat, as those which have more of it; and as with us they lie half the year torpid, and half dead, their vital warmth at that time, like fire smothered under ashes, barely exists, and needs perhaps no more air than what the creature took in at one inspiration, before its laying itself down for the season, which serves it till the life-renewing spring returns. Serpents, according to Mr. Ray, may be divided into the poisonous and the harmless; the first having long dentes exerti, with poisonous liquors contained at their bottom, which, on biting, they discharge into the wound: the others wanting these teeth, and this poison. They may also be divided, in regard to their generation, into the oviparous and viviparous; but this is a less firmly founded distinction than may be supposed, since all serpents are truly and properly produced of eggs; and the only difference is, that some deposit their eggs in dung-hills, and the like places, to be hatched by accidental heat, while others retain those eggs to be hatched in their own bodies, and so bring forth living young ones. Of the first kind is the common snake, of the latter the viper. *Ray's Syn. Quad. et Sup.*

SERPENT, Eubalinus. Mr. Cleyer has given a very remarkable account, in the German Ephemerides, of the prodigious size and voracious appetite of this serpent, and its manner of feeding. This gentleman assures us that they grow to the length of five feet, and are surprisingly daring in attacking large creatures for prey. Their neck, he observes, is so small, in proportion to the creature they seize, that it is a wonder that they can swallow them whole, which yet experience shews they certainly do, having no power of tearing them to pieces. This gentleman saw a complete stag taken out of the belly of one of these snakes, with all its limbs remaining on; and at another time a wild goat which had been swallowed in the same manner, and from another a complete porcupine, a very troublesome morsel; and there was once

an instance, in the molucca islands, of a woman big with child being thus sucked down whole by one of these creatures. *Ray's Syn. An.*

The method of their managing their prey is this: when thoroughly lank, lean, and hungry, the snake lies in wait for any thing that it can seize; he darts out upon the prey, and, seizing it with his mouth, winds his body round that of the creature; and this he is able to do with such force, that he will often, in twisting himself firmly round the creature, break the bones within its skin. This he continues, and at the same time is biting, with his terrible mouth, all the tender parts of the creature, till he has destroyed it; or, if it be an animal too strong to be killed by these simple folds, it will drag it to some neighbouring tree, and, tying it fast against that, draw its body so forcibly round it, as to crush all its bones to pieces by the help of that solid resisting body. The part it usually seizes with its teeth, at the same time, is the creature's nose, which he bites so forcibly as not only to stop the breath, but to occasion a discharge of blood, which helps to forward its destruction.

But the most singular attack, ever known to have been made by this creature, is that recorded by the same author, of its seizing a buffalo, which it destroyed in the manner above described, though it was a long time about it, and was obliged to have recourse to the method of tying it up to a tree, against which it broke its bones severally, with a noise that was heard to a great distance. When the creature had thus destroyed its prey, it continued breaking the bones, till there was not one left whole in the body, and the whole resembled a shapeless mass of matter.

The jaws and throat of this, and of the other serpent kind, though small and narrow, are prodigiously extensible, and made so by nature, for the swallowing these morsels. The snake, when the prey lay in this state before it, licked it all over, and covered it thick with its saliva, and that so regularly, that the whole carcass looked as if daubed over with glue. This done, it opened its jaws to a monstrous extent, and sucked in the head of the prey, and continuing incessantly sucking, at length drew down the whole body.

This is a work of time, and very often two or three days are employed in it. And, when the animal is thus got down,

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the snake is swelled and bloated up all over with it, and is no longer in a state of offending or even of defending itself, or so much as running away; and the people of the places where this species is common, well know this, and find it an easy thing to destroy them in this state, and are very happy when they catch one, as their flesh is a very delicate food. *Ephem. Germ. Ann. 12. Obs. 7.*

SERPENT, in music, a wind instrument, serving as a basis to the cornet, or a small shawm, to sustain a chorus of fingers in a large vessel. It had its name serpent from its figure, as consisting of several folds or wreaths, serving to take off its length, which would otherwise be six or seven feet: it is usually covered with leather, and consists of three parts: a mouth-piece, neck, and tail. It has six holes, by means of which they give it the compass of two octaves.

SERPENTARIA, VIRGINIAN SNAKEROOT: the root of a species of aristolochia growing in Virginia and Carolina. The root is small, light, bushy, composed of a number of strings or fibres issuing from one head and matted together, of a brownish colour on the outside, and paler or yellowish within.

SNAKEROOT has an aromatic smell, approaching to that of valerian, but more agreeable, and a warm bitterish pungent taste, which is not easily concealed or overpowered by a large admixture of other materials.

The root is a warm diaphoretic and diuretic. It is reckoned one of the principal medicines of the alexipharmac kind; and as such is in general use, in low malignant fevers and epidemic diseases, for supporting the vis vitæ, raising the pulse, promoting a diaphoresis, and correcting the putrid disposition of the humours. It is given, in substance, from a few grains to a scruple or half a drachm in decoction or infusion to a drachm and upwards. Tinctures of it are prepared in the shops, by macerating two or three ounces of the root in a quart of proof spirit, or of a spiritous alexiterial water mixed with one sixth its quantity of distilled vinegar; which last ingredient is an excellent addition to these kinds of medicines in acute diseases.

SERPENTARIUS, in astronomy, a constellation of the northern hemisphere, called also Ophiuchus. The stars in this constellation, in Ptolemy's catalogue, are 49, in Tycho's 25, and in Mr. Flamsteed's 69.

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SERPENTINE, denotes any thing that resembles a serpent; hence the worm or pipe of a still, twisted in a spiral manner, is termed a serpentine worm.

SERPENTINE MARBLE, a kind of marble spotted like the skin of a serpent, whence its name. The ancients called it ophites.

SERPIGO, in medicine, a species of herpes, vulgarly called a ring-worm.

SERPILLUM, *Mother of Thyme*, in botany, a species of thyme.

SERRATED, in general, something indented, or notched, in the manner of a saw.

SERRATUS, in anatomy, a name given to several muscles of the body from their resembling a serra or saw. — As

SERRATUS *anticus minor*, which arises thin and fleshy, from the second, third, fourth, and fifth superior ribs; and ascending obliquely, it is inserted fleshy into the process coracoides of the scapula, which it draws forward. It also helps in respiration.

SERRATUS *anticus major*; which comes from the whole basis of the scapula, and is inserted into the seven true ribs and first of the false ribs, by so many distinct portions representing the teeth of a saw.

SERRATUS *posticus superior*, ariseth by a broad and thin tendon from the two inferior spines of the vertebræ of the neck, and the three superior of the back; and, growing fleshy, is inserted into the second, third, and fourth ribs by so many distinct indentations. These two help to draw the ribs upwards, and bring them to right angles with the vertebræ; and, consequently, make the cavity of the thorax wider and shorter.

SERRATUS, *posticus inferior*, arises with a broad and thin tendon from the three inferior spines of the vertebræ of the back, and from the two superior of the loins; its fibres, ascending obliquely, grow fleshy, and are inserted by four indentations into the four last ribs.

SERVANT, a term of relation signifying a person who owes and pays a limited obedience for a certain time, to another in quality of master.

SERVICE, in law, a duty which a tenant, by reason of his fee, owes to his lord.

SERVING, in the sea-language, the act of winding a quantity of leather, canvas, or cordage round any rope, to preserve it from being galled or rubbed by the friction produced at sea by the agitation of the ship on the waves. The materials applied to this purpose are termed

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termed service. See *Plat*, *Rounding*, and *Fresher*.

SERVITOR, in the university of Oxford, a scholar or student, who waits upon another for his maintenance there.

SERVITORS of *Bill*, servants or messengers of the marshal of the King's Bench, sent with bills or writs, to summon people to that court: these are now called tip-staves.

SERUM, the thin watery part of the blood. See *Blood*. The word is Latin, and literally signifies whey.

SESSAMOIDEA OSSA, in anatomy, several small bones placed between the joints of the fingers and toes.

SESAMUM, the oily-grain plant, in botany, a genus of plants, the flowers of which are produced from the wings of the leaves, without any foot-stalk; the flower-cup consists of one leaf, divided into five long slender segments: the flower is of one leaf, in shape like those of the fox-glove: the pointal, which rises in the middle of the flower, afterwards becomes an oblong four-cornered pod, divided into four distinct cells, which are repiete with esculent seeds.

SESELI Seed, in the materia medica, the name of a seed of a plant, called also by some *Libanotis*, and growing three or four feet high, with leaves like fennel, but of a paler green. It is a native of warm climates. It incises, opens, and discuties, and is cephalic, neurotic, pectoral, nephritic; and is good against epilepsies, apoplexies, vertigos, and all disorders of the head and nerves.

SESQUI-ALTERAL PROPORTION, in geometry and arithmetic, is when any number or quantity contains another once and an half, and the number so contained in the greater, is said to be to it in subsequi-alteral proportion.

SESQUI-DUPLICATION Ratio, in geometry and arithmetic, is when any number or quantity contains another twice and a half.

SESILE Roots, in gardening, such tuberosse roots as adhere to the stalk.

SESSILE Leaf, a leaf fixed immediately to the stalk, or root, without any foot stalk.

SESSION, the sitting of an assembly or council,

SET, or **SETTS**, a term used by farmers and gardeners to signify the young plants of the white-thorn, and other shrubs, with which they raise their quick-set hedges, &c. The white-thorn is the best, of all trees, for this purpose, and, under proper regulations, its sets seldom

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fail of answering the farmer's utmost expectations.

SETACEUS Vermis, in natural history, a name given by Dr. Lister to that long and slender water-worm, which so much resembles a horse-hair, that it has been supposed by the vulgar to be an animated hair of that creature.

SETON, in surgery, a wound made generally in the hind part of the neck, and kept in a state of suppuration by means of a small skein of silk, cotton, or horse-hair, passed through the skin by means of a needle or probe. It is of use to divert a defluxion of humours from the eyes.

SETTER, among farmers, implies a wound made in the dew-lap of an ox or cow, and a tent made of the root helleborafter inserted into it, whereby the wound is kept in a constant state of digestion, and the humours find a vent.

SETTLE, a small ship used principally by the Italians and Greeks in the Mediterranean. It is equipped with two masts, which are furnished with lateen sails.

SETTING, in navigation, the act of marking the bearings of any distant object by the compass.

SETTING, in astronomy, implies the sinking of a heavenly body below the horizon.

SETTING, among sportsmen, implies a method of taking partridges by means of a dog properly trained for that purpose. The setting-dog generally used is a long land-spaniel, taught by nature to hunt partridges more than any other game, and in his untaught state running over the fields in search of them; but being taught, the creature is under such excellent command, that he will, in the midst of his highest career, attend the least hint from his master, and stand still to look in his face and to take his orders by the slightest signals; and when he is so near his game that it is almost in his mouth, he will stand stock-still, or lye down on his belly, till his master arrives, and he receives his directions. The setting-dog being taken to the haunt of the partridges, is to be cast off, and sent to range; but he must be made to keep near the sportsman, and not to run wildly on, but to beat all the ground regularly. If in the dog's ranging he stops on a sudden, the sportsman is to make up to him, and as there is certainly game before him, he must be ordered to advance; if he refuses this, and looks back and shakes his tail, it is a signal that they are close before him, and the sportsman is then to take

take a circumference, and look carefully before the dog's nose, to see where they are, and how they lie; then going up and flaking down one end of the net, he is to command the dog to lie still, and to draw the net gently over the birds, then making in with a noise, he is to spring them, and they will be entangled and taken, as they rise.

SETTLING, in navigation, the act of lowering any object by the increase of the distance from it.

SEVENTH, in music, an interval, of which there are four kinds. The first is called the diminished or defective seventh, and consists of three tones and three greater semi-tones. The second is composed diatonically of seven degrees and six intervals, of which four are tones, and the rest greater semi-tones; and, chromatically, of ten semi-tones, six whereof are greater and four lesser. The third is composed diatonically like the former, of seven degrees and six intervals, six whereof are full tones, and the seventh a greater semi-tone; so that only one semi-tone is wanting to complete the octave; and, chromatically, of eleven semi-tones, six whereof are greater, and six lesser. The fourth, called the redundant seventh, is composed of five tones, a greater semi-tone and a lesser; so that it wants only the difference between the greater and lesser semi-tone, to render it equal to the octave.

In thorough bases, the seventh is marked by a figure of 7, but if it be accidentally flat, by b 7, or $7 b$; if sharp, $\sharp 7$, or $7 \sharp$.

SEVERANCE, in law, the separating of two parties joined in one writ.

* SEVERN, a river rising in Montgomeryshire, and running E. till it enters Shropshire, where, having passed by Shrewsbury, it turns S. passes by Bridgnorth, Worcester, and Gloucester, and discharges itself into the Bristol channel. It is a very swift stream, and is navigable for boats from Welch-pool in Montgomeryshire, receiving forty rivers in its course.

* SEVILLE, a large, rich, populous, and handsome city of Spain, and the capital of Andalusia. It is seated in a large plain, near the river Guadalquivir, and stands upon more ground than Madrid, though it has not so many inhabitants; there being only 20,000 families in the city, and 3000 in the suburbs. It is of a round form, and its fortifications consist of strong walls, flanked with high towers. The Moors built an aqueduct, still to be seen, which is six miles in length. The cathedral

church is the largest in Spain, and stands in the middle of the town; its roof is extremely high, and supported on each side by two rows of stately columns; it is 75 feet in length, and 80 in breadth, and its chapels are built in the antique manner. The steeple is of very curious workmanship, and extremely high, consisting of three towers, one above another, with galleries and balconies. Besides the cathedral, there are several others, particularly those belonging to religious houses. They reckon 85 benefices, and 3500 chaplains. The convent of St. Francis is the most curious, and is adorned with a very handsome public square, in the middle of which there is a fine fountain. It contains 160 monks, besides 140 strangers of the same order, and the church is built in the Gothic taste. The cloister is supported by marble pillars, and embellished with good paintings. The university of Seville, consists of many colleges, where the professors enjoy rich pensions. Near the cathedral is the royal palace, called Alcazar, which was partly built by the Moors, and partly in the modern taste by king Pedro; it is a mile in extent: some connoisseurs say, this structure has not its equal in Europe. The exchange where the merchants meet is a square building of the Tuscan order, each front being 100 feet in length, and 3 stories high. The suburb stands on the other side of the river, over which there is a long bridge, supported by boats; in this the house of the inquisition is placed, and in it there are public walks, where most of the inhabitants go to take the air. The town-house is adorned with a great number of statues, and has a large square before it, with a fine fountain in the middle. There are 120 hospitals, richly endowed. The situation of Seville, near the sea, renders it one of the most trading and rich cities of Spain. The East and West India companies have their houses here, where they are obliged to register themselves and their merchandizes; their ships indeed stop in the harbour of Cadiz, but their loading is carried from thence to Seville. And there all the gold and silver is coined, above 600 men being employed in the mint. The country about it is extremely fertile in corn, wine, and every thing else that contributes to the pleasure of life; and there is vast plenty of oil, for to the W. of the river there is a grove of olive-trees, 30 miles in length. It is 45 miles from the sea, and 212 S. by W. of Madrid. Long. 5. 50. W. Lat. 37. 15 N.

SEX

SEWER, a drain, conduit, or conveyance, for carrying off water, sullage, &c. from a house, street, field, or the like.

SEWED, in the sea-language, the state of a ship when the water has ebbed from her as she lies on the ground.

SEX, something in the body which distinguishes the male from the female.

SEXES of flowers, those parts of flowers which perform the same offices in the vegetable world, that the similar parts of animal bodies perform in that department of nature.

SEXAGENARY, something relating to the number sixty.

SEXAGENARY, or *Sexagesimal Arithmetic*, implies a method of computation proceeding by sixties: such as is used in the division of a degree into sixty minutes, of a minute into sixty seconds, of a second into sixty thirds, &c.

SEXAGESIMA, the second Sunday before Lent, so called because near sixty days before Easter.

SEXAGESIMALS, or **SEXAGESIMAL Fractions**, are fractions whose denominators are in a sexageuple ratio; that is, a prime = $\frac{1}{60}$, a second = $\frac{1}{3600}$, a third = $\frac{1}{21600}$, &c.

SEXANGLE, in geometry, a figure containing six angles, and consequently six sides.

SEXTANT, in geometry, signifies the sixth part of a circle, or an arch containing 60 degrees.

SEXTANT; the name of a mathematical instrument, whose limb contains sixty degrees.

SEXILE, an aspect of the planets, when they are two signs or sixty degrees distant from each other.

SEXTON, an officer in the reformed churches, whose office it is to take care of the vessels, vestments, &c. belonging to the church, and to attend the minister, church wardens, &c. at their meetings.

SEXTUPLE, in music, implies a mixed sort of triple time, which is beaten in double time.

SEXUALISTÆ, a term used by botanical authors, to signify those writers who have established the classes of plants upon the difference of the sexes, and parts of fructification of plants; such as Linnaeus, and many others.

* **SEYMOUR**, Edward, duke of Somerset, lord-protector in the reign of Edward VI. was the eldest son of Sir John Seymour of Wolf-hall, in the county of Wilts, knight. He was edu-

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cated in the university of Oxford; and returning from thence to his father at court, when martial achievements were encouraged by king Henry VIII. he applied himself early to the profession of arms; spent his youth in the wars; and accompanying the duke of Suffolk in his expedition to France in 1533, was knighted by that nobleman. Upon his sister's marriage with the king, in 1536, he was created viscount Beuchamp, and in 1537 earl of Hertford. In 1540 he was sent to France to dispute the limits of the English borders, and upon his return was elected knight of the Garter. In 1542, he attended the duke of Norfolk in his expedition into Scotland; and the same year was made lord great chamberlain of England for life. In 1544, being made lieutenant-general of the North, he embarked for Scotland with 200 sail of ships, on account of the Scots refusing to marry their young queen to prince Edward, and landing in the Firth, took Leith and Edinburgh, and after plundering and burning them, marched by land into England. In August the same year, he went to the assistance of the king at the siege of Boulogne, with several troops of Almain and Flemings; and after it was taken, defeated an army of 14,000 French, who lay encamped near it. By the will of Henry VIII. he was appointed one of the 16 executors of his majesty, and governors of his son, till he should be 18 years of age. On the 10th of February, 1547-8, the protector was appointed lord-treasurer, and the next day created duke of Somerset; on the 17th he obtained a grant of the office of earl marshal for life, and on the 12th of March following had a patent for the office of protector and governor of the king and his realms, by which he had a negative in the council, but they had none on him, and he could either bring his own friends into it, or select a cabinet council out of it at pleasure. In August 1548 he took out a commission to be general, and marched into Scotland, on the 10th of September, gained a complete victory at Musselburgh, and on the 29th of that month returned to England full of honour, having with the loss of only 60 men in the whole expedition taken 80 pieces of cannon, bridled the two chief rivers of the kingdom by garrisons, and gained several strong places. This success raised his reputation, and the nation had great expectations from his government; but the breach between him and his brother the lord high-admiral

rd of England, lost him this advantage, and his being beheaded in March 1548, caused him to be greatly censured. In September 1549 a strong faction was formed against him by Wriothesley, earl of Southampton, and Dudley, earl of Warwick, the former hated him on account of his causing him to be deprived of the office of lord high-chancellor, and the latter expected to have the principal administration of affairs upon his removal. His partiality to the commons provoked the gentry; his consenting to his brother's execution, and his palace in the Strand, now called Somerset-house, erected on the ruins of several religious structures, disgusted the people, and many of the clergy hated him, not only for promoting the Reformation, but on account of his enjoying many of the best manors of the bishops. The first discovery of their designs, induced him to remove the king to Hampton-Court, and then to Windsor; but finding the party against him too formidable for him to oppose, he submitted to the council, and on the 14th of October was committed to the Tower. In January 1551, he was fined 2000*l.* a year, with the loss of all his offices and goods. However, in a month after he obtained a full pardon, and so managed his interest with the king, that the next April he was brought both to the court and council: and to confirm the reconciliation between him and the earl of Warwick, he married the lady Jane, his daughter, to the lord viscount Lisle, the earl's son. But their friendship was of short duration, for in October 1551, Warwick, now created duke of Northumberland, caused the duke of Somerset to be sent to the Tower, alleging his having formed a design of raising the people; and that when himself, the marquis of Northampton, and the earl of Pembroke, had been invited to dine at the lord Paget's, Somerset determined to have set upon them by the way, or to have killed them at dinner. On the first of December he was brought to his trial, and was found guilty of felony in intending to imprison the duke of Northumberland. He was beheaded on Tower-hill, the 22d of January, 1551-2, and died with great serenity. It was generally believed that the conspiracy for which he suffered, was a mere forgery; and indeed the not bringing the witnesses into court, but only the depositions, and the parties themselves sitting as judges, gave great occasion to

condemn the proceedings against him. Besides, his four friends, who were executed for the same cause, ended their lives with the most solemn protestations of their innocence. "Though his administration, says Mr. Granger, was not without blemishes, his conduct was generally regulated by justice and humanity. He repealed the sanguinary and tyrannical laws of Henry VIII. and by gentle and prudent methods promoted the great work of the Reformation. Such was his love of equity, that he erected a court of requests in his own house, to hear and redress the grievances of the poor. His attachment to the reformed religion, but much more his envied greatness, drew upon him the resentment of the factious nobility, at the head of whom was his own brother the lord-admiral, and John Dudley, earl of Warwick, afterwards duke of Northumberland. He caused the former to be beheaded, and was soon after brought to the block himself, by the intrigues of the latter, to whose crooked politics and ambitious views, he was the greatest obstacle."

SHAD, the name of a sea-fish, of the herring kind, called also the mother of the herring, and by some authors clupea. It is very common in many seas, and in some of our large rivers where the tide ebbs and flows. They run up these streams in great numbers during the months of March and April, when they are very fat; in May they become lean, and then return again to the sea.

SHADOW, in optics, a privation, or rather a diminution of light, by the interposition of some opaque body. A shadow is of itself invisible; and, therefore, when we say we see a shadow, we partly mean that we see bodies placed in the shadow, and illuminated by light reflected from collateral bodies; and, partly, that we see the confines of the light. See *Light*.

If the opaque body that projects the shadow be perpendicular to the horizon, and the place it is projected on be horizontal, the shadow is called a right shadow; and such are the shadows of men, trees, buildings, mountains, &c. But if the opaque body be placed parallel to the horizon, the shadow is called a versed shadow; as the arms of a man stretched out, &c.

Of SHADOWS from the Sun. The sun being vastly larger than the whole globe of the earth, must give all its shadows

pointed, because it illumines more than half of them. In consequence of this demonstration, we might conclude, that all the sun's shadows must be less than the bodies that project them, and diminish more and more as they recede further and further. Now, this would be true were there any relation between the body illuminated and the body illumining: but as all objects on the earth are so small in comparison of that star, the diminution of their shadows is imperceptible to the eye, which sees them always equal; i.e. either broader or narrower than the body that forms them: on this account all the shadows caused by the sun are made in parallels. From the whole it appears, that to find the shadow of any body whatever opposed to the sun, a line must be drawn from the top of the luminary perpendicular to the place where the foot of the luminary is to be taken: and through this place an occult line is to be drawn though one of the angles of the plan of the object, and another from the sun to the same angle; and the intersection of the two lines will shew how far the shadow is to go: all the other lines must be drawn parallel thereto. Experience teaches, that stiles, or elevations of the same height, removed to a distance from each other, do yet project equal shadows at the same time: for they are lengthening and shortening, in proportion as the sun comes nearer, or recedes further off; one or other of which he is continually doing.

SHADOWS by Torch-Light. The shadow of an erect pyramid by torch-light falls as it would by the light of the sun; and in both cases there is but one line, whereon the verticle point of the pyramid will be found.

There is a third kind of shadow, neither produced by the sun nor a torch, but only a fine sunny day, which wanting strength to finish and define its form, occasions a dimness near the object. Now for this there is no certain rule, but every body conducts it at discretion. All these shadows, whether of the sun, torch, or day-light, must appear darker than the parts of objects not illuminated, and that part of the shadow most remote from the object must be darker than that nearer it. See *Claro-Obscuro*.

* **SHADWELL, THOMAS**, poet-laureate, and an eminent dramatic writer, was born in 1648 at Stanton-hall in Norfolk. He was educated at Caius college in Cambridge, from whence he removed

to the Middle Temple to study the law, where having spent some time, he travelled abroad. On his return to England he became acquainted with the most celebrated persons of wit and distinguished quality, and applied himself to the study of polite literature, and more particularly to dramatic poetry, in which he had great success, and upon the revolution was made poet-laureate and historiographer to king William and queen Mary, which employments he enjoyed till his death. Mr. Dryden, who had warmly espoused the opposite interest, was at the revolution dismissed from his post of poet-laureate, and Mr. Shadwell succeeding him in it, he treated the latter with the utmost contempt, and in his *Mac Fleckno* has transmitted his antagonist to posterity in a very disadvantageous light, but notwithstanding his poetical abilities were greatly inferior to those of Mr. Dryden, many of the best wits of that age have given their testimony in favour of his comedies. He died suddenly the 20th of November, 1692, in the 52d year of his age, as we are informed by the inscription upon the monument erected to his honour in Westminster abbey, by his son Dr. Thomas Shadwell. This monument is adorned with his bust, crowned with a chaplet of bays, and other decorations. He wrote seventeen dramatic pieces, and several poems, among which is a translation of the tenth satire of Juvenal. Mr. Brady represents him as a man of great honesty and integrity, and says, that he had a real love of truth and sincerity, an inviolable fidelity and strictness to his word, and an unalterable friendship wherever he professed it.

SHAFT of a Column, in architecture, the body of it, or the part contained between the capital and the base.

SHAFT of a Mine, the entrance or passage into it.

SHAGREEN, or **CHAGREEN**, a kind of grained leather imported from Constantinople, and the coast of Barbary, where it is said to be prepared from the skin of the hound-fish, and is much used in covering cases for instruments, &c.

* **SHAKESPEARE, WILLIAM**, the most celebrated dramatic poet England has produced, was the son of John Shakespeare, a considerable dealer in wool, and was born at Stratford upon Avon, in Warwickshire, in April 1564. He studied for some time at a free-school; but his father having ten children, he was

was obliged to withdraw him from thence, in order to have his assistance in his own business, that he might contribute to the support of the rest of the family. It has been disputed, whether he made much proficiency in the learned languages after this time. Mr. Rowe supposes, from the few passages that look like an imitation of the ancients, that he had never read them; while Mr. Pope, and Mr. Warburton are, of a contrary opinion. Upon his quitting the grammar-school, he seems to have applied himself entirely to the mode of life proposed by his father; and in order to settle in the world, married the daughter of Mr. Hatchway, a substantial yeoman near Stratford, when he was not above seventeen years of age. In this domestic obscurity he continued some time; till falling into bad company, he was several times prevailed on to steal deer from a park belonging to Sir Thomas Lucy of Charlcot, near Stratford; for which being prosecuted by that gentleman, as he thought, too severely, he wrote a ballad against him, which was so very severe, that Sir Thomas Lucy prosecuted him with such severity, that he was obliged to leave his family, and shelter himself in London. This Sir Thomas Lucy was, it is said, afterwards ridiculed by Shakespeare, under the character of Justice Shallow. On Shakespeare's arrival at London, he was without money and friends, and being a stranger, knew not where to apply for support. At that time, coaches not being in use, gentlemen were accustomed to ride to the play-house, and Shakespeare being driven by the last necessity, went to the play-house door, and picked up a little money by taking care of the gentlemen's horses who came to the play. He even became eminent for his skill in that mean employment; and being taken notice of for his diligence, had soon more business than he himself could manage, and therefore hired boys under him, who were known by the name of Shakespeare's boys. At length some of the players accidentally discoursing with him, were to pleased with his conversation, that they recommended him to the house, where he was at first admitted in a low station; but his admirable wit, and the natural turn of it to the stage, soon distinguished him, if not as an extraordinary actor, yet as an excellent writer. His name is printed, amongst those of the other players, before some old plays, without mentioning the

parts he acted: Mr. Rowe says, that the top of his performance was the ghost in his own Hamlet. He was highly esteemed by queen Elizabeth, who had several of his plays acted before her, and was so well pleased with the admirable character of Falstaff in the two parts of Henry IV. that she commanded him to continue it in one play more, and to make him in love, which is said to have occasioned his writing the Merry Wives of Windsor. He also received many great and uncommon marks of favour and friendship from the earl of Southampton, and his lordship at one time gave him 1000 l. to enable him to go through with a purchase which he heard he had a mind to. We find Shakespeare's name among the actors in Ben Jonson's Sejanus, which made its first appearance in 1633; and that very year a licence under the privy-seal was granted by James I. to him, Burbage, Philipps, and several others, authorizing them to exercise the art of playing comedies, tragedies, &c. as well at their usual house, called the Globe, in Southwark, as in any other parts of the kingdom, during his majesty's pleasure. The latter part of Shakespeare's life was spent in ease, retirement, and the conversation of his friends. He had the good fortune to gather an estate equal to his wants, and in that to his wishes, and is said to have spent some years before his death at his native town of Stratford upon Avon, where his pleasurable wit and good nature engaged him in the acquaintance of the gentlemen in the neighbourhood. He died in 1616, in the fifty-third year of his age, and was interred in the chancel of the great church at Stratford, where a monument was erected to him, with the following inscription:

Good friend, for Jesus' sake forbear,
To dig the dust inclosed here.
Blest be the man that spares these stones,
And curst be he that moves my bones.

An elegant monument has been since erected to his memory in Westminster abbey, on which there is a noble epitaph, taken from his own Tempest, which is excellently appropriated to him, whose works, the transcripts of the human heart, will never be forgot till that epitaph is fulfilled. — When

The cloud-cap'd towers, the gorgeous
palaces, self,
The solemn temples, the great globe it-
And

And all which it inherit, shall dissolve,
And like the baseless fabric of a vision,
Leave not a wreck behind.

His dramatic writings were first published together in folio in 1623; since which they have had many editions, and have been republished by Mr. Rowe, Mr. Pope, Mr. Theobald, Sir Thomas Hanmer, Mr. Warburton, Mr. Steevens, and Samuel Johnson L. L. D.

SHAMBLES, in mining, a term used to express a sort of niches, or landing-places, left at certain distances in the audits of mines. The method of digging the tin-mines in Devonshire, and some parts of Cornwall, is this: they sink their way in such a breadth as is sufficient for them to stand and work, and at every fathom they leave a square place vacant, to which the ore is to be thrown up with shovels as it is dug. This they do from east to east; that is, as far as a man can conveniently throw up the ore with his shovel. Thus the ore, as it is dug by the beelman, is thrown up by the shovellers, who follow them from shamble to shamble, till it comes to the top of the mine. This, however, is but an inconvenient way, and the use of these shambls is generally supplied by a winder at the opening of the mine, which manages two buckets, the one of which is sent down empty, while the other is sent up full; and one man employed below to load, and another above to empty. *Phil. Trans. Num. 69.*

SHAMMY, or **CMAMOIS Leather**, a kind of leather dressed either in oil or tanned, and greatly esteemed for its softness, pliancy, and being capable of bearing soap without injury.

SHANK, in the manege, that part of a horse's fore-leg which lies between the knee and the fetlock.

SHANKER, in medicine, a malignant ulcer, usually occasioned by the venereal disease. Cockburn says, any shanker may be cured with an ointment compounded of quicksilver and turpentine; without any further trouble; and Heister recommends the same method of practice.

SHARE of a Plough, that part which cuts the ground, the extremity forward being covered with a sharp-pointed iron called the point of the share; and the end of the wood behind the tail of the share. The length of the whole share, from point to tail, according to Tull, should be three feet nine inches; at the

the top of the iron it has an upright piece called the fin, and, near the iron at the other end, there is an oblong squared hollow, called the socket; the use of which is to receive the bottom of the sheat. Near the tail there is a thin plate of iron, well riveted to the wood; by means of this plate the tail of the share is held firmly to the hinder sheat of the plough by a small iron pin, with a screw at the end, and a nut screwed on it, on the inner or right side of the sheat. The point of the share is that part in which it does not run up into the fin; this point is generally made three inches and a half in length, and should be flat underneath, and round at the top, and the lower part of it must be of hard steel. The edge of the fin should also be well steered, and should make an acute angle with the share. The socket is a sort of mortise; it should be a foot long, and about two inches deep: the fore-end of it must not be perpendicular, but oblique, conformable to the end of the sheat which enters into it. The upper edge of the fore-part must be always made to bear against the sheat; but, if this end of the socket should not be quite so oblique as the sheat, it may be helped by paring off a small part of the wood at the point.

SHARK, in ichthyology, is the name of a very large fish, of which there are two species, distinguished by their different colours, blue and white. The blue shark is a very terrible fish of prey, growing to seven or eight feet in length, and considerably thick in proportion; the mouth is capacious, and furnished with large broad teeth, some of them serrated at the edges. The white shark is flat backed, and is larger and has a greater number of teeth than the preceding, some of them weighing near a thousand pounds.

SHARP, in music, a kind of artificial semi-tone. See *Character*.

SHEAT of a Plough, that part of the plough which passes through the beam, and is fastened to the share.

SHEEP, in zoology, a well-known species of cattle, and which are kept at the least expence of any to the farmer. They will thrive upon almost any ground, and therefore are preferred by many to the larger cattle. The best sort of sheep for fine wool are those bred in Herefordshire and Worcestershire, but they are small and black-faced, and bear but a small quantity. Warwick, Leicester-shire, Buckingham, and Northampton-shire,

shire, breed a large-boned sheep, of the best shape, and deepest wool we have got. The marthes of Lincolnshire breed a very large kind of sheep, but their wool is not good, unless the breed be mended by bringing in sheep of other countries among them, which is a scheme of late very profitably followed there.

The northern counties in general breed sheep with long, but hairy wool: and Wales breeds a small hardy kind of sheep, which has the best-tasted flesh, but the coarsest wool of all. The farmer should always buy his sheep from a worse land than his own, and they should be big-boned, and have a long greasy wool, curling close and well. These sheep always breed the finest wool, and also are the most approved of by the butcher for sale in the market.

The farmers have a method of knowing the age of a sheep, as a horse's is known, by the mouth. When a sheep is one shear, as they express it, it has two broad teeth before; when it is two shear, it will have four; when three, six; when four, eight; after this their mouths begin to break. The difference of land makes a very great difference in the sheep. The fat pastures breed straight tall sheep, and the barren hills and downs breed square short ones; woods and mountains breed tall and slender sheep, but the best of all are those bred upon new-ploughed land, and dry grounds. On the contrary, all wet and moist lands are bad for sheep, especially such as are subject to be overflowed, and to have sand and dirt left on them. The salt marshes are, however, an exception to this general rule, for their saltness makes amends for their moisture; any thing of salt, by reason of its drying quality, being of great advantage to sheep. As to the time of putting the rams to the ewes, the farmer must consider at what time of the spring his grass will be fit to maintain them and their lambs, and whether he has turneps to do it till the grass comes; for very often both the ewes and lambs are destroyed by the want of food; or, if this does not happen, if the lambs are only stunted in their growth by it, it is an accident that they never recover. The ewe goes twenty weeks with lamb, and according to this it is easy to calculate the proper time. The best time for them to yearn is in April, unless the owner has very forward grass, or turneps, or the sheep are field sheep, where you have not inclosures to keep them in, then it may be proper

they should yearn in January, that the lambs may be strong by May-day, and be able to follow the dam over the fallows, and water-furrows; but then the lambs that come so early must have a great deal of care taken of them, and so indeed should all other lambs at their first falling, else, while they are weak, the crows and magpies will peck their eyes out. When sheep are turned into fields of wheat or rye to feed, it must not be too rank first, for, if it be, it generally throws them into scowerings. Ewes that are big should be kept but bare, for it is very dangerous to them to be fat at the time of their bringing forth their young. They may be well fed, indeed, like cows, a fortnight before-hand, to put them in heart *Mortimer's Husbandry*.

The feeding sheep with turneps is one great advantage to the farmers, from the crops they raise of them: they soon fatten upon them, but there is some difficulty in getting them to feed on them; the old ones always refuse them at first, and will sometimes fast three or four days, till almost famished; but the young lambs fall to at once. The common way, in some places, of turning a flock of sheep at large into a field of turneps, is very disadvantageous, for they will thus destroy as many in a fortnight as would have kept them a whole winter. There are three other ways of feeding them on this food, all of which have their several advantages. The first way is to divide the land by hurdles, and allow the sheep to come upon such a portion only at a time, as they can eat in one day, and so advance the hurdles farther into the ground daily, till all be eaten. This is infinitely better than the former random method, but they never eat them clean even this way, but leave the bottoms and outsides scooped in the ground; the people pull up these indeed with iron crooks, and lay them before the sheep again, but they are commonly so fouled with the creature's dung and urine, and with the dirt from their feet, that they do not care for them; they eat but little of them, and what they do, does not nourish them like the fresh roots. The second way is by inclosing the sheep in hurdles, as in the former; but in this they pull up all the turneps they suppose the sheep can eat in one day, and daily remove the hurdles over the ground, whence they have pulled up the turneps; by this means there is no waste, and less expence, for a person may in two hours pull

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pull up all those turneps, the remaining shells of which would have employed three or four labourers a day to get up with their crooks out of the ground, trodden hard by the feet of the sheep: and the worst is, that as, in the method of pulling up first, the turneps are eat up clean, in this way, by the hook, they are wasted, the sheep do not eat any great part of them, and when the ground comes to be tilled afterwards for a crop of corn, the fragments of the turneps are seen in such quantities on the surface, that half the crop at least seems to have been wasted. The third manner is to pull up the turneps, and remove them in a cart or waggon to some other place, spreading them on a fresh place every day; by this method the sheep will eat them up clean, both roots and leaves. The great advantage of this method is, when there is a land not far off which wants dung more than that where the turneps grow, which perhaps is also too wet for the sheep in winter, and then the turneps will, by the too great moisture and dirt of the soil, sometimes spoil the sheep and give them the rot. Yet such ground will often bring forth more and larger turneps than dry land, and when they are carried off, and eaten by the sheep on plowed land in dry weather, and on green sward in wet weather, the sheep will succeed much the better; and the moist soil, where the turneps grow, not being trodden by the sheep, will be much fitter for a crop of corn than if they had been fed with the turneps on it. The expence of hurdles, and the trouble of moving them is saved in this case; and this will counterbalance at least the expence of pulling the turneps, and carrying them to the place where they are to be eaten. They must always be carried off for oxen. *Tul's horse-boeing Husbandry.*

SHEEP'S DUNG, is one of the best manures we know. It succeeds better upon cold clayey lands than any other dung whatever; but as it is not so conveniently to be collected as the dung of larger animals, it is commonly conveyed to the land it is intended for, by folding the sheep upon it. The urine, as well as the dung, is thus given to the land, and is of very great advantage; but the farmer always should plow in this sort of manure as soon as he can, for the sun soon rots it of a great part of its virtue.

SHEEP NOSE WORM, in natural history, a species of fly-worm, found in the

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noses of sheep, goats, and stags, and produced there from the egg of a large two-winged fly.

SHEERING, or **SHEARING**, in the woollen manufacture, implies the cutting off, with large sheers, the too long nap, in order to render the cloth more smooth and even.

SHEKEL, a coin in use among the ancient Jews, worth two shillings and three-pence farthing sterling.

SHELF, among miners, the same with what they otherwise call soft ground, or soft country; being that part of the internal structure of the earth, which they find lying even, and in an orderly manner, and having evidently retained its primitive form and situation unmoved by the waters of the universal deluge, while the circumjacent, and upper strata have plainly been removed from their original place.

SHELL, *Concha*, in natural history, a hard, and as it were stony covering, with which certain animals are defended, and thence called shell-fish.

Fossil SHELLS, those found buried at a great distance from the sea in the bowels of the earth. The number and variety of sea shells which are found far from seas buried at great depths in the earth, and often immersed in the hardest stones, is an object of great wonder. Of these some are found remaining almost entirely in their native state, but others are variously altered by being impregnated with particles of stone, and of other fossils; in the place of others there is found mere stone or spar, or some other native mineral body, expressing all their lineaments in the greatest nicety, as being formed wholly from them, the shell having been first deposited in some solid matrix, and thence dissolved by very slow degrees, and this matter left in its place, on the cavities of stone and other solid substances, out of which shells have been dissolved and washed away, being afterwards filled up less slowly with these different substances, whether spar or whatever else: these substances, so filling the cavities, can necessarily be of no other form than that of the shell, to the absence of which the cavity was owing, though all the nicer lineaments may not be so exactly expressed. Besides these, we have, also in many places, masses of stone formed within various shells; and these, having been received into the cavities of the shells while they were perfectly fluid, and having therefore nicely filled all their cavities,

must retain the perfect figures of the internal part of the shell, when the shell itself should be worn away, or perished from their outside. The various species we find of these are, in many genera, as numerous as the known recent ones; and as we have in our own island not only the shells of our own shores, but those of many other very distant ones; so we have also many species, and those in great numbers, which are, in their recent state, the inhabitants of other yet unknown or unsearched seas and shores. The cockles, mussels, oysters; and the other common bivalves of our own seas are very abundant; but we have also an amazing number of the nautilus kind, particularly of the nautilus Græcorum, which, tho' a shell not found living in our own, or any neighbouring seas, yet is found buried in all our clay-pits about London, and elsewhere; and the most frequent of all fossil shells in some of our counties are the conchæ anomizæ, which yet we know not of in any part of the world in their recent state. Of this sort, also, are the cornua ammonis and the gryphitæ, with several of the echinata and others.

* SHENSTONE, (WILLIAM) a celebrated poet of the present century, was the eldest son of a gentleman in Shropshire, who farmed his own estate. His father, sensible of his son's extraordinary capacity, sent him a commoner to Pembroke College, in Oxford, designing him for the church; but he could never be persuaded to enter into orders. In his private opinions, he adhered to no particular sect, and hated all religious disputes. Tenderness was his peculiar characteristic; he shewed it to all who differed from him, and his friends, domestics, and poor neighbours, daily experienced the effects of his benevolence. This virtue he frequently carried to such an excess as seemed to border upon weakness; yet, if any of his friends treated him ungenerously, he was not easily reconciled. On such occasions, however, he used a maxim highly worthy of being observed and imitated: "I never," said he, "will be a revengeful enemy; but I cannot, it is not in my nature, to be half a friend." The generosity of his temper prevented his paying a proper regard to the use of money. He exceeded, therefore the bounds of his paternal fortune; but, if we consider the perfect paradise into which he had converted his estate, the hospitality with which he lived, his charities to the indigent, and all out of

an estate that did not exceed three hundred pounds a year, one should rather wonder that he left any thing behind him, than blame his want of economy; yet he left more than sufficient to pay all his debts; and, by his will, appropriated his whole estate for that purpose. Tho' he had a high opinion of many among the fair sex, he forbore to marry. A passion he entertained in his youth was with difficulty surmounted. The lady was the subject of that admirable pastoral, in four parts, which has been so universally, and so justly admired; and which, one would have thought, must have softened the proudest and most obdurate heart. His works have been published in 3 volumes, octavo.

SHERIFF, an officer in each county of England, nominated by the king, invested with a judicial and ministerial power, and who takes place of every nobleman in the county, during the time of his office. His judicial authority consists in hearing and determining causes in his county-court, and in keeping the peace of the county; he being by the common law the principal conservator of the peace there; for which reason he is to assist the justices, and raise the posse comitatus when occasion requires; and such persons, as on a hue and cry he shall apprehend upon suspicion of felony, he is to commit to prison; he may also imprison any one who breaks the peace in his presence. The ministerial office of the sheriff consists in proclaiming statutes, and making returns of writs for electing knights of the shire, &c. He collects the king's rents, seizes the profits of lands forfeited, and the goods of felons, levies the king's debts, fines, amercements, &c. and is accountable to the king for the profits of the county, on which account the sum of 4000*l.* is set apart and annually allowed to the sheriffs of the several counties of England, to help them to pass their accounts, and to defray their expences at the assizes, &c. where no sheriff is obliged to keep a table for the entertainment of any persons but those of his own retinue: neither is he to have above forty servants in livery, or less than twenty attending him. It is also his office to execute the writs and processes out of the king's court; and no process is to be served but by the sheriff. He returns juries for trials, as well in civil as in criminal cases, except where there is cause of challenge against him, in which case they are to be returned by the coroner.

And lastly, the sheriff is to see that criminals are executed, and the order of law observed in putting them to death. A sheriff has usually under him an under-sheriff, bailiffs, and a goaler, for a l of whom he is answerable. An under-sheriff ought always to have his deputy in the courts of justice, in order to receive their commands; and give an account of business, &c. All returns made by the under-sheriff are in the name of the high-sheriff; and for every default in the execution of his office, either by fraud or neglect, the high-sheriff is amerceable in the exchequer. On the death of any sheriff, the under-sheriff shall officiate in his name, till another is appointed, and also be answerable, &c.

It is said above, that the sheriffs for every county are nominated by the king, but there is one exception; for the Sheriffs of London and Middlesex are elected by the Livery of London. Sheriffs were first appointed in England in the year 1079. Sheriffs were first drank to by the Lord Mayor, by way of nominating them to the office, in 1486.

* **SHERLOCK**, Thomas, a celebrated bishop of London, was the son of Dr. William Sherlock, and was born in the year 1678. He studied at Eton college, and at Catherine hall, Cambridge, where he took his degrees. He early discovered great parts, with deep and extensive learning. Upon the resignation of his father, in 1704, he was, when very young, made master of the Temple; and it is remarkable, that this mastership was held successively by father and son for above 70 years. Young as he was, when he attained to this station, he acquitted himself in such a manner as not only silenced the clamour of his enemies, but even exceeded the expectation of his friends. In 1714, he was advanced to the mastership of Catharine hall, Cambridge; and having obtained the deanery of Chichester about two years after, he began to distinguish himself as a polemical writer in the Bangorian controversy, and was at the head of the opposition against Dr. Hoadley, then bishop of Bangor, during which contest he published a great number of pieces. At length Mr. Collins, the celebrated free thinker, publishing a discourse of the Grounds and Reasons of the Christian Religion, occasioned a great number of pieces being written on the use and intent of prophecy; and though Dr. Sher-

lock did not enter directly in the controversy, he published six discourses under the title of, *The Use and Intent of Prophecy in the several ages of the World*. These discourses have been much admired. In 1728, he succeeded Dr. Hoadley in the bishopric of Bangor, and, in 1734, was translated to the see of Salisbury. Upon the death of Dr. Potter, in 1747, he was offered the archbishopric of Canterbury, but declined accepting of it, on account of his ill state of health; yet afterwards recovering in a great degree, he the next year succeeded Dr. Gibson in the see of London, which he enjoyed till his death. He likewise continued to hold, along with this high dignity, the mastership of the Temple, chiefly in compliance with the request of the two honourable Societies, who were unwilling to part with him; but he at last resigned in 1753. Towards the latter end of his life, he was afflicted with a terrible malady, which deprived him first almost of the use of his limbs, and then of his speech; but in this weak state of body the powers of his mind still remained unimpaired; and he published, in 1755, a volume of his sermons, which were followed the next year by four volumes more. He died on the 28th of July, 1761, in the 84th year of his age. Besides the above works, he published several others, particularly an ingenious piece, intitled, "*The Trial of the Witnesses of the Resurrection*."

* **SHETLAND**, sundry islands, which constitute part of the county of Orkney, in Scotland. There are forty-six in all, besides forty holms, or lesser islands, and thirty rocks, frequented only by fowls. The air is cold and piercing; yet many of the inhabitants live to a great age. In the midst of summer, they have so much light at night, that they can see to read by it. The sun sets between ten and eleven in the evening, and rises between one and two in the morning; consequently the day is very short, and the night long in winter: this, with the violence of the tides and the tempestuous seas, deprives them of all foreign correspondence from October to April, during which time they know nothing of what passes in the rest of the world.

SHIELD, a weapon of defence used by the ancients; it was in the form of a light buckler, and borne on the arm, in order to turn off the strokes of lances, darts, javelins, &c.

SHIELD,

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SHIELD, in heraldry, the escutcheon, or field, on which the bearings of coats of arms are placed.

SHILLING, an English silver coin, twenty of which are equal to a pound sterling. Shillings were first coined in 1505.

SHINGLES, among builders, small pieces of wood, in the form of wedges, four or five inches broad, and eight or nine long. They are used instead of tiles or slates for covering the roofs, &c. of buildings.

SHIP, a general name for all large vessels managed upon the sea by the assistance of sails and the helm.

A ship is navigated, or carried along, on the water by the action of the wind upon her sails, and the direction of her motion is governed by the effort of the helm, which acts upon her hind-part, like the tail of a fish.

The sails are expanded upon masts, to receive the current of wind; of these there are a great variety, according to the size of the ship, the place where she is built, or the force and direction of the wind. The form of sails are extremely different; but are generally either trapezias, or near the form of a square, or parallelogram, excepting stay sails and lateen sails, which are all usually triangular. The masts are more or less in number, according to the size, or figure of the ship, which also determines her name: and, as the effort of the wind on the sails strains the masts considerably, it is necessary to support them by strong ropes, reaching from their tops to the ship's side, called shrouds; they are also sustained by other great ropes, from the fore part of the ship, called stays. See *Mast, Shrouds, and Sails*.

A mast, in large vessels, is usually composed of three pieces, the lower mast, the top-mast, and top-gallant mast. See *Mast*.

Every ship has three masts, viz. the main-mast, fore-mast, and mizen-mast, besides the bow-sprit. Each of these is furnished with three yards, viz. the lower-yard the top-sail-yard, and the top-gallant-yard. The bow-sprit has also two yards, viz. the sprit-sail and sprit-sail top-sail-yard. These are employed to extend the upper-edges of the sails. See *Bow-sprit and Yard*.

Amongst the variety of ships used in different countries, the principal are those of three masts, which are either known simply by the name of ships, which comprehends all the capital ones, or of galle-

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ons, galleasses, frigates, hag-boats, cats, fly-boats, barks, pinks, polacres, zebecks, which are all mentioned in their proper places.

Those of two masts are either snows, doggers, ketches, bilanders, brigs or brigantines, schooners, hermaphrodites, fettees, gallies, barca-longas or shallops. See *Snow, Dogger, &c.*

And lastly, those of one mast are sloops, tartans, bean-cods, smacks, hoys, &c. All under this size are usually denominated boats. See *Boat*.

With regard to the motion of a ship on the water, it is already treated of in the articles *NAVIGATION* and *SAILING*.

SHIP-BUILDING, the art of designing, constructing, and forming ships.

"It cannot be denied but that the art of ship-building, which is of so great an advantage to a state, is (although greatly improved) the most imperfect and most undetermined of all arts. The best builders have seldom any regard to other parts of a ship besides the two principal, viz. the head and stern; from hence it proceeds that the same builder, who builds two ships at the same time, and on the same plan, often builds them so unequal, that we find their qualities extremely different.

"Chance has frequently so great a share in the construction, that we see ships built with the greatest exactness and application, often prove the worst; and those which are built without any strict regard to rules, answer the purpose much better: so that the largest ships are sometimes the most defective; and we often find much better amongst the merchant ships, than amongst ships of war.

"It is true, that within these few years the French builders have endeavoured to bring their art to perfection. Some have begun by making plans, in which they have determined the several models, or draughts, of the fore and after parts of a ship; but as they want the necessary principles, they work with great uncertainty; their ships are not better than those which were built without the knowledge of reading and writing; neither sail better, nor bear so much sail, nor last so long. In a word, the builders in our days are of the same opinion with the antients, that what agrees best with the sea, is yet undetermined.

"I doubt not several able builders have flattered themselves they have found in the practice of frequent and repeated ef-

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says, what they have not found in theory, but, I believe, they have been disappointed in the success: a ship is too complicated a machine, and there are too many things which must concur to render it complete, to leave its perfection to blind chance only. It very often happens in these cases, that when artists design to make their work complete, they spoil it, by endeavouring to rectify what before constituted its perfection: besides, the greater the essay or model, the greater will be the expence; and the smaller the model is formed, the more imperceptible will be the beauties or faults. We must however allow, that trials and experience are the beginning of all arts, when the works are yet but simple and undigested; but when they become more intricate or compounded, we must have recourse to theory, to develop that multitude of confused circumstances which perplex the artists, and lead them into numberless errors.

"I think the theory of ship-building ought to be reduced to the examination of three different articles: 1. Those which determine the figure of a ship. 2. Those which determine or contribute most to her solidity. 3. Those which best facilitate her plans. *L'Hesse's Theory of the Construction of a Ship.*

SHIRE, the same with county, a division, or portion of the kingdom.

SHIVERY *Salt*, a name given by the salt-workers to a sort of salt very different from the common brine salt, and formed among the common sort in the boiling pan.

SHOAD, in mining, a train of metal-line stones mixed with earth, lying sometimes near the surface, and sometimes at considerable depths; but always affords a sure indication to the miner, that the load or vein of ore is not far distant.

SHOAL, in the sea language, a place where the water is shallow.

SHOALED, among tin-miners, signifies fragments of ore, which by rains, currents of water, &c. are torn from the load or vein of ore.

SHOE, a covering for the foot, usually made of leather.

SHORE, or SHOAR, a place washed by the sea, or by some large river. Count Marigli divides the sea shore into three portions, the first of which is that tract of land which the sea just reaches in storms and high tides, but which it never covers; the second part of the shore is that which is covered in high tides and storms, but is dry at other times; and

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the third is the descent from this, which is always covered with water.

* SHORE, JANE, the mistress of Edward IV. was the daughter of a citizen of London, and her beauty being her chief portion, she was induced to marry entirely against her inclination, Matthew Shore, a goldsmith in Lombard-street, who was extremely rich, but much advanced in years. The fame of this lady soon reached the king's ears, when Edward IV. made his addresses to her, and won her. Her husband left England, and she repaired to court. Historians represent her as extremely beautiful, remarkably cheerful, and of most uncommon generosity. The king was no less captivated with her disposition than her person, for she never spoke ill of any one, but often importuned him in behalf of the unfortunate. She was above accepting of gratuities for her good offices; her riches were therefore trifling when she fell into misfortunes. All the accounts we have of this lady represent her as having as many excuses for frailty as ever fell to any woman's share. With so much modesty did she employ the ascendancy she had gained over Edward, that even the pride of the queen, the most sensible sufferer, was never offended at their intimacy. The respect she had gained by her munificence, her benevolence, and affability, had made her considerable, even in the beginning of this reign; and it was not till after the death of Edward that her adversity began. She then continued her unlawful commerce with lord Hastings, who had been so devoted to his royal master, that he never discovered his passion for this his favourite mistress till after that prince's death. Both she and her noble lord began now to appear so unalterably devoted to the young king and his brother, as to incur the hatred of the duke of Gloucester, who looked upon them as the main obstacles to his ambition. To give some colour to his proceedings against Hastings, whom he caused suddenly to be beheaded, he directed the sheriff of London to arrest Mrs. Shore as his accomplice, and send her to the Tower for examination; but nothing excepting her unlawful commerce with Edward and Hastings appearing against her, the formidable character of treason and witchcraft terminated in a single penance, which she was obliged to perform on the next Sunday morning, when she was brought in procession in a white sheet, from the bishop of London's palace to St. Paul's

Paul's

Paul's church, with the cross carried before her, she holding a wax taper in her hand, when she appeared with such a grace, and with such resignation, that she won the hearts of the beholders; but her house was riled, and all she was worth, which amounted to only two or three thousand marks, was taken from her. The circumstances of her story, with respect to a proclamation, making it death to relieve her, and her dying of hunger in Shoreditch, are entirely fabulous, and founded only on an old ballad, on which Mr. Rowe built his tragedy; for it is certain that she was living in the reign of Henry VIII. when the great Sir Thomas More knew her. "Proper she was," says Sir Thomas Moore, "and fair, nothing in her body you would have changed: albeit, some that now see her, deme her never to have been well-visaged, whose judgment seemeth to me to be somewhat like as though one should guess the beauty of one long before departed by her scalp taken out of the charnel-house: for now she is old, lean, withered, and dried up, nothing left but ryvilde skin and hard bone. At this day, she begs of many, that at this day had begged, had she not bene."

SHORT ACCENT, in grammar, a mark which shews that the syllable over which it is placed is short. It is marked thus (^).

SHOT, in military affairs, includes all kinds of balls or bullets, for fire-arms.

Trundle SHOT, an iron-shot, about seventeen inches long, and sharp-pointed at both ends, with a ball of lead fastened upon it, about a hand-breadth from each end.

* **SHOVEL**, Sir **CLOUDESLEY**, a gallant sea-officer at the end of the last, and beginning of the present century, was born at a village near Clay in Norfolk, in the year 1650, and was first bound apprentice to a shoemaker, but finding no appearance of his ever raising his fortune in that way, he betook himself to the sea, under the protection of Sir Christopher Myyns, with whom he went as cabin-boy; but assiduously applying himself to the study of navigation, he shortly became an able seaman, and soon arrived at preferment. In 1674 a strong squadron being sent against the piratical state of Tripoly, under the command of Sir John Narborough, Mr. Shovel sailed with him as his lieutenant. They arrived before Tripoly in the spring, and Sir John being induced by the nature of his

instructions to try negotiation rather than force, sent Mr. Shovel to demand satisfaction for the injuries suffered by the English, and security for the time to come. He went on shore, and delivered his message with great spirit; but the dey despising his youth, treated him in a disrespectful manner, and sent him back with an indefinite answer. Mr. Shovel, on his return, informed the admiral of some remarks he had made on shore. Sir John sent him back with another message, and furnished him with rules for conducting his observations. The dey behaved to Mr. Shovel in a worse manner than before, who on his return assured the admiral, that, notwithstanding the enemy's lines and forts, it was practicable to burn the ships in the harbour. Accordingly in the night of the 4th of March, lieutenant Shovel, with all the boats in the fleet filled with combustible matter, boldly entered the harbour, and met with more success in destroying the ships than could have been expected; of which Sir John gave so honourable an account in all his letters, that the next year Mr. Shovel was raised to the command of the *Saphire*, a fifth rate, from which he was soon after removed into the *James Galley*, a fourth rate, in which he continued till the death of king Charles II. King James preferred him to the *Dover*, in which situation he was at the Revolution. He afterwards distinguished himself at the battle of Bantry-bay, in the *Edgar*, a third rate, in such a manner, that on king William's coming to Portsmouth, he was pleased to confer upon him the honour of knighthood. In 1690 king William was so pleased with his diligence and dexterity in conveying him and his army into Ireland, that he delivered him a commission of rear-admiral of the blue with his own hand. In 1692 he was raised to the rank of rear-admiral of the red, and at the same time appointed commander of the squadron that was to convoy the king to Holland. On his return from thence he joined admiral Ruffel with the grand fleet, and had a great share in the victory of La Hogue. In 1702 he was sent to bring the spoils of the Spanish and French fleets from Vigo. In 1703 he commanded the grand fleet up the Straights, where he protected our trade, and exerted himself for the relief of the Protestants in the Cevennes, and countenanced such of the Italian powers as were inclined to favour the allies. The next year he was sent with a powerful squadron

squadron to join Sir George Rooke, who commanded a grand fleet in the Mediterranean, and had a share in the glorious action off Malaga; and upon his return was presented to queen Anne by prince George, when he met with a very gracious reception. In 1705, when it was thought necessary to send both a fleet and army to Spain, Sir Cloudesley had the command of the fleet jointly with the earls of Peterborough and Monmouth, and arrived before Barcelona the 12th of August; when it was chiefly through his activity in furnishing guns for the battery, and men to play them, and assisting with his advice, that the place was taken. After the unsuccessful attempt upon Toulon, he bore away for the Straights, and soon after resolved to return home; and having left part of his fleet for the security of the coasts of Italy, proceeded with the rest, consisting of ten ships of the line, four fire-ships, a sloop, and a yacht, for England. The Association, in which was Sir Cloudesley, and several of the other ships, were lost by striking on the rock called the Bishop and his Clerks. This dreadful accident, in which the admiral and all his crew, amounting to 700 men, perished, happened on the 22d of October 1707. Sir Cloudesley's body was thrown ashore the next day on one of the Scilly islands, where some fishermen took him up, and having taken a valuable emerald ring from his finger, stripped and buried him. This coming to the ears of Mr. Paxton, who was purser of the Arundel, he found out the fellows, declared the ring to be Sir Cloudesley Shovel's, and obliged them to discover where they had buried the body, which he took up, and carried in his own ship to Portsmouth; whence it was conveyed to London, and interred with great solemnity in Westminster abbey, where a monument was afterwards erected to his memory.

SHOULDER PITCH, among farriers, a disease in a horse, when the pitch or point of the shoulder is displaced.

SHOULDER-SPLAIT, a hurt which a horse receives from some dangerous slip, whereby the shoulder is parted from the breast.

SHOULDERING PIECE, among builders, the same with bracket. See *Bracket*.

SHOWER, a cloud resolved into rain, and discharged upon a certain tract of ground. See *Rain*.

SHREW-MOUSE, or *Hardy SHREW*,

in zoology, a genus of quadrupeds, of the order of the glires; the upper fore-teeth of which are folid, and lower ones serrated: the upper canine teeth are very small, and four in number. The shrew-mouse is an extremely singular little animal, which greatly resembles the common mouse, but is somewhat smaller.

* **SHREWSBURY**, Battle near. This battle was fought in the year 1403, between Henry IV. king of England, and the earls of Northumberland and Douglas, and was the next military exploit after the battle at Holmedon. Some disputes arising between the king and Percy concerning the prisoners made in that battle, and the latter expostulating too warmly for the disposition of the other, was forbid his presence. The soul of Percy took fire at this treatment; he could not bear this contempt without thoughts of revenge. It was chiefly by his assistance that Henry came to the crown, and he thought himself powerful enough to take it from him. The earl of March, whose name was Mortimer, had a better title to the crown than Henry, being descended from the third son of Edward III. whereas Henry's claim was derived from the fourth; but Mortimer not having so powerful a party at his devotion, was obliged to give way to his more powerful cousin of Lancaster. To this lord Percy sent an agent, with offers of assistance towards recovering the crown. This proposal was readily accepted, and a solemn league was concluded between these parties; to whom were joined the younger Percy, alias Hotspur, and the earl of Worcester, brother to Northumberland, with some other lords. They also engaged several Scotch lords to join in the plot, and Percy set at liberty the prisoners of that nation which were yet in his custody, upon the promise of levying troops for his service. As soon as the confederates were ready, the three Percys appeared in arms in the north, and suddenly marched their troops to join the Welch, who were advanced into Shropshire. When the two armies met, they published a manifesto, signifying that they had taken up arms to curb the intolerable tyranny of Henry, and enumerating such of his actions as they deemed tyranny. To this manifesto the king published an answer, and then marched to fight the rebels, who were encamped at Shrewsbury. The battle was furiously fought on both sides. At first the king had the advantage; his horse was killed under

under him, and the prince of Wales, his son, was wounded in the face; but Henry seasonably calling in his body of reserve, recovered his ground, and then the state of the battle was entirely changed. The king's last charge putting the rebels into some disorder, they were so briskly pushed, that in the end Henry obtained a compleat victory. Young Percy, with ten thousand men, were slain on the spot. The earl of Worcester was taken and beheaded. Douglass, the Scotch general, was taken, but was released for his valour. He had that day slain with his own hand four persons who were arrayed in all points like the king, a stratagem which saved Henry's life. Douglas having bent all his endeavours against the king only. Henry's loss is said not to have exceeded one thousand six hundred.

* **SHREWSBURY**, a large town of Shropshire, and capital of the county, with three markets, on Wednesdays, Thursdays, and Saturdays; and seven fairs, Saturday after March 15, Wednesday after Easter-week, and Wednesday before Whitsuntide, for horned cattle, horses, sheep, cheese, and linen cloth; July 3, and August 12, for horned cattle, horses, hops, sheep, cheese, linen, and lambs-wool; October 2, and December 12, for horned cattle, horses, sheep, hogs, butter, cheese, and linen. It is seated almost in the middle of the county, on a pleasant ascent, and on the banks of the Severn, which surrounds it on every side, except towards the N. It has five parish churches, besides a chapel, two of which, St. Mary's and St. Elchmond's, are handsome structures, beautified with lofty spires. It is surrounded with a wall, and had formerly a castle, which is now in ruins. It is governed by a mayor, recorder, steward, aldermen, and common-council. It sends two members to parliament, who are chosen by the burghesses. It has 12 trading companies, a free-school, and an infirmary. It is 160 miles N. W. of London.

SHRIMP, in ichthyology, the English name of two different species of the squilla, viz. the common shrimp, and the smooth nosed shrimp. The common shrimp is the long-tailed squilla, with the snout serrated above and tridentated below; the body is oblong and rounded above the beak or snout; which distinguishes it from all the other species: it

is long, of a lanceolated figure, sharp-pointed, and has eight denticulations above and three below. The smooth nosed shrimp, or long-tailed squilla, with a smooth snout, grows to the same size with the common shrimp; however, the body is thick, and the snout is very short, without the spines or denticulations of the other.

SHRINE, in ecclesiastical history, a case to hold the relics of some saint. The word is formed from the Latin, *serinium*, a desk or cabinet.

* **SHROPSHIRE**, or county of Salop, is bounded on the N. by Cheshire, on the E. by Staffordshire, on the S. by Herefordshire, and on the W. by Montgomeryshire. It is about 43 miles in length from N. to S. and 28 in breadth from E. to W. It contains 23,280 houses, 170 parishes, 16 market-towns, of which five send members to parliament; and 139,680 inhabitants. The soil is fertile, and fit both for tillage and pastures, abounding in corn, and feeding a great number of cattle. The principal rivers are the Severn, which runs through the middle of the county; the Terne, the Clun, the Rea, the Tean, and the Roden, which abound with fresh-water fish. The western parts are very hilly and mountainous. There are several mines of iron and pit-coal. The principal town is Shrewsbury, besides which the most remarkable are Ludlow and Bridgenorth.

SHROVE-TUESDAY, in the Christian church, the Tuesday after Quinquagesima Sunday. It is so called from the old Saxon word *shrive*, which signifies to confess: it having been a custom formerly in the Romish church, to confess their sins on that day, in order to receive the eucharist, and thereby qualify themselves for a more religious observation of Lent. In process of time, this custom was changed into that of mutual invitations, in order to take leave of flesh-meat and other dainties; and this made way for sports and other merriments, which at present make up the whole business of the carnival, or season immediately preceding Lent.

SHROWDING, of Trees, the cutting or lopping off the top branches; it is only practised on those trees which are designed for fuel, or some present use, not being fit for timber.

SHRUB, a woody plant, of a size less than a tree, and which, besides its principal

cipal stem and branches, frequently from the same root, puts forth several other considerable sets or stems.

SHUTTLE, in the manufactures, an instrument used by the weavers, which with the thread it contains, either of woollen, silk, flax, or other matters, serves to form the woofs of stuffs, cloths, linens, ribbands, &c. by throwing the shuttle alternately from right to left, and from left to right, across between the threads of the warp, which are stretched out lengthwise on the loom.

SI, in music, a seventh note lately added by Le Maire to the six ancient notes invented by Guido Arctin, by means of which the difficulty attending the ancient scale is avoided.

* **SIAM**, a kingdom of Asia, in the East-Indies, bounded on the north by Laos; on the east by Cambaya and Hea; on the south by a gulph of the same name; and on the west by the peninsula of Malacca. It is about 350 miles from north to south, and 250 where it is broadest. In the rainy season the rice fields and meadows are overflowed, which renders them very fruitful. The city of Siam stands on an island made by the river, in a low country, and is as fruitful as any spot of ground in the world, for it produces rice, several kinds of pulse, many fruits and roots, with wild and tame cattle, and the river abounds in many sorts of excellent fish. The city is about 10 miles in circumference, and there are many canals from the river which cross the town several ways. The walls are high and thick, and are constructed of brick and stone, but the houses, though large, are low, and built on stakes driven into the ground, about 10 or 12 feet high. The king has three palaces; and there are many large temples, well adorned and decorated with gilded images. The women in Siam are the only merchants in buying goods, and generally maintain their husbands with their traffic. The Europeans, while at Siam, accommodate themselves with temporary wives, for the women are very fond of foreigners, and they agree with each other in the presence of their nearest friends and relations, and then it is deemed a lawful marriage for the time agreed upon. These wives are very obliging, and take the whole management of the household affairs into their own hands. If the husband leaves the kingdom, and is willing to continue the marriage, he leaves her about 6s. 8d. a month to live

upon in his absence, otherwise she may take another husband at the year's end. And here it must be noted, that women are never the worse esteemed for having been married to foreigners. The natives of both sexes go bare headed, and cut their hair so as to leave it two inches long, and then they gum it, and comb it upwards, so that it looks rather like bristles than hair, and makes their heads seem very large. They are well shaped; and have a large forehead, with a small nose, and a handsome mouth, with plump lips, and black sparkling eyes. The lappets of their ears are thick, and the men have but little hair on their chins. The men are of an olive complexion, but the women are of a straw colour, and very prolific. Even the courtiers have nothing but a cloth which reaches from the waist to the middle of the thigh, and a sort of a waistcoat made of muslin, with a cap upon their head covered with muslin, and terminating in a point. The cloth that the men wrap about their middles is brought round between their legs, and turned into their girdles behind; but that of the women hangs down a little below their knees, and they cover their breasts with another cloth, throwing the ends over their shoulder, the rest of their bodies being quite naked: this must be understood of the better sort, for the common people of both sexes go quite naked, except a covering for those parts which decency requires them to hide. They however adorn themselves with rings, bracelets, and pendants.

* **SIBERIA**, a country comprehending the most northern part of the Russian empire, and of Asia. It is bounded on the E. by the ocean of Japan; on the S. by Great Tartary; on the W. by Russia; and on the N. by the Frozen Sea. It is 2000 miles in length from E. to W. In the south part of Siberia all the necessities of life may be had, but the north is extremely cold, almost uncultivated, and thin of people. The principal riches consist in fine furs, which are of great value. Tobolski is the capital, and the residence of a viceroy. This country is inhabited by three sorts of people, namely, Pagans, who are the natives; Muscovites and Mahometans. The first dwell in the forests during the winter, and along the rivers in summer, clothing themselves with the skins of elks, reindeer, and other animals. All their riches consist in a bow and arrows, a knife,

knife, and a kettle; and their rein-deer and dogs serve instead of horses. They regard their idols no longer than they think they do them good, for when they are supposed to do harm they burn them; but they principally adore the sun and moon. The natives in general live a wandering life, depending chiefly on what they take by hunting or fishing. The principal traffic of the Muscovites that live in Siberia is to China in the winter, when they carry their goods on sledges over the snow and frozen lakes. They have discovered the whole country as far as the eastern ocean, the utmost bounds of which is called Kamtschatka.

SIBYLS, in pagan antiquity, certain women, said to have been endued with a prophetic spirit, and to have delivered oracles predicting the fates and revolutions of kingdoms. We have in the writings of the ancients mention made of ten of them, the eldest of whom being named Sibylla, all the rest of the same sex, who afterwards pretended to the like fatidical spirit, were called from her Sibyls. The most eminent of the ten, mentioned in history, was she, whom the Romans called Sibylla Cumæa or Erythræa. She was born at Erythræa in Ionia, from whence she removed to Cumæ in Italy, and there delivered all her oracles from a cave or subterraneous vault dug out of the main rock.

Justin Martyr, who had been upon the place, speaking of it, and the Sibyl, tells us, it was reported, that this Sibyl was a Babylonian by descent, and the daughter of Berofus, who wrote the Chaldaic history, but how she came into Italy, no one could tell. As to the cave, where she delivered her oracles, he tells us, it was a kind of chapel, or oratory, hewn out of the main rock. Here he was shewn three hollow places, in which she used to wash herself, and a high advanced seat, from which, they pretended, she delivered her oracles. This place continued to be seen many hundred years after, till the year 1539, when a violent earthquake utterly destroyed this chapel of the Cumæan Sibyl. But travellers are still shewn a vault, which they call the Grotto of the Sibyl to this day. The Sibylline oracles, of which we hear so much in the Roman history, had their origin as follows. In the reign of Tarquin the second, a certain woman came to Rome, and brought with her nine books of oracles, which she offered to the king, demanding for them three hundred

pieces of gold. Tarquin refusing to give her that price for them, she burnt three of the nine, and then offered him the remaining six at the same price, being again rejected by the king, who thought her mad, she burnt three more of them, and then offering him the remaining three, persisted in demanding the same price for these, as she did at first for all the nine. At which strange procedure Tarquin being moved, consulted the augurs thereupon, who earnestly advised him to purchase the books. Hereupon the money being paid, and the books delivered to the king, the woman gave him strict charge to keep them safely, as containing oracles relating to the future state of Rome: after which she disappeared, and was never more seen. Tarquin, putting these books into a stone coffin, laid them up in a vault under the temple of Jupiter Capitolinus, and appointed two of the principal nobility to keep them, with strict orders to let no one peruse them. After the dissolution of the regal power, the commonwealth made these books a main engine of state, for quieting the people in all disturbances. For, whenever any great misfortune befel them, or any prodigies affrighted them, these books were ordered to be consulted, and the keepers of them always reported such answers as served the purposes of the government. These guardians of the Sibylline books were at first but two, and were then called Duumviri: afterwards they were increased to ten, and were then called Decemviri: lastly, their number was augmented to fifteen, and then they had the name of Quindecemviri. They were always chosen out of the Patrician families, and held the office for life, being exempted from all burthens of the state both civil and military. The books were carefully kept, till the civil wars of Sylla and Marius; when the Capitol being accidentally set on fire, and burnt down to the ground, the Sibylline oracles were burnt with it. This was eighty-three years before Christ. Seven years after, the Capitol being rebuilt, the senate resolved, if possible, to restore these oracles. Accordingly they sent ambassadors to Erythræa in Ionia, where the Cumæan Sibyl was born, and where many of that Sibyl's oracles were said to be preserved, to take copies of as many as they could find. These deputies, having collected together, from the papers of several private persons, about a thousand verses in the Greek language, pretended to be the

prophecies of this and other Sibyls, brought them to Rome; and at the same time enquiry being also made at Samos Ilium, and other cities in Greece, Sicily, Africa, and Italy, for the like oracles and prophecies of the Sibyls, great numbers that pretended to be such were gathered together, and laid up in the Capitol, to supply the place of those that were burnt. But the use which the Romans proposed to make of these oracles, being much defeated by their being vulgarly known, and in the hands of many persons, a law was made that all who had any copies of them, should bring them in to the pretor of the city, and all were prohibited, under pain of death, to retain them. Notwithstanding this, many, that had transcripts of these oracles, still kept them privately in their hands, and their number increased daily. For this reason, Augustus, when he took upon him the high-priesthood, revived the above-mentioned law: whereupon so many copies of these pretended prophecies being brought in, as amounted to a great multitude of volumes, he ordered them to be strictly examined, and having burnt and destroyed all that were disapproved, repositd the rest for the use of the state. These afterwards Tiberius caused to be re-examined, and burnt many more of them, preserving only such as were of moment, and useful to the state. To these Sibylline oracles, as long as Rome continued heathen, great recourse was had; and they remained in use to the year of our Lord 399, when they were utterly destroyed. For, not long before that time, a prophecy being given out by the heathen Romans, pretended to be taken from the Sibylline writings, which imported that Peter having by magic founded the Christian religion to last for the term of 365 years only, it was at the end of this time wholly to vanish, and be no more professed in the world, and this term expiring in the year of our Lord 398; Honorius the Roman emperor, taking the advantage hereof to convict these writings of manifest forgery and imposture, ordered them all to be destroyed; and accordingly, the next year, Stilico, by virtue of the imperial decree, burnt the Sibylline books, and demolished the temple of Apollo, in which they were repositd. It was out of the Sibylline books that Virgil took that famous prophecy, which makes the subject of his fourth Eclogue. This prophecy the poet in fine address applies to the birth of

the son of Pollio: but the ancient Christian writers generally understood it to be a direct prediction of the coming of the Messiah. And it was from the same source, that Suetonius derived what he says, "That in the time of Vespasian a constant and general opinion prevailed throughout the whole East, that fate had decreed, that about that time should come forth out of Judea those who should obtain the empire of the world." Which prediction is likewise ascribed by the Christian writers to the birth of Christ, and the propagation of his religion over the whole world. Thus the Sibyls are supposed to have foretold the Messiah, and the establishment of the Christian religion.

• SICILY, an island of the Mediterranean. Sicily being an island, it can be only bounded by the sea, however it is separated from the kingdom of Naples by a narrow streight called the Faro, but as Messina is seated on it, it is called the Faro di Messina. This is about five miles in breadth, and the famous shelves called Scylla and Charybdis, often mentioned by the Latin poets, are near it. The two kingdoms of Naples and Sicily are under the same climate, and the productions are much the same, only Sicily abounds more in corn, particularly in the vallies of Noto and Mazara, but then there are fewer trees and fruits; the valley of Demona has more forests and fruit trees than the two others. Sicily is said to contain one million of inhabitants, who in general have a very bad character. They formerly cultivated sciences here, and there was a university at Catanea, but now learning is greatly neglected. It is said there are mines of all kinds, but it does not appear that they reap any advantage from them. It is divided into the vallies just mentioned, called by them Val di Demona, Val di Noto, and Val di Mazara. Don Carlos became king of the two Sicilies in 1736, in consequence of the treaty of Vienna; but the king of Spain dying in 1760, he succeeded to that crown, and his third son Ferdinand became king of the two Sicilies. Mount Aetna, now called Gibello, the famous volcano, is by Val di Demona. It is about 165 miles in length, and 112 in breadth, and produces wine, oil, silk, and excellent fruits.

SICYANIA, or GOULD-WORM, in natural history, a genus of insects, being of an oblong form, flat on the belly, and rounded on the back; the skin is soft; and the mouth large, horizontal, and emarginated, or dented in the middle.

side. It grows to two thirds of an inch in length, though more usually it is not half that size; its breadth is nearly two thirds of its length.

SIDE, the half of any thing, as an animal, a ship, &c. The sides of an animal are distinguished into the right and left side; but those of a ship, into the star-board and larboard side. In geometry, the sides of a rectilinear figure are the lines which form its periphery.

SIDE-LAYS, among hunters, dogs that are let slip at a deer, as he passes.

SIDES-MEN, or **SYNOD'S MEN**, persons who in large parishes, are appointed to assist the church-wardens in their enquiry and presentments of such offenders to the ordinary, as are punishable in the spiritual court.

SIDERITES, in natural history, the same with the magnet. See *Magnet*.

SIDERITIS, Iron-wort, in botany, a genus of plants, with a monopetalous, labiated, and ringent flower; the seeds are four in number, and contained in the cup, which serves instead of a capsule; add to this, that the flowers grow in circles round the stalks, at the joinings of the leaves.

* **SIDNEY**, (Sir Philip,) was the son of Sir Henry Sidney, lord deputy of Ireland and president of Wales, by Mary, the daughter of John Dudley duke of Northumberland, and was born at Penshurst in Kent, the 29th of November, 1554. He was sent young to Christ Church College, Oxford, where he continued till he was about seventeen years of age, and in June, 1572, was sent to travel, and, having visited France, Germany, Hungary, and Italy, returned to England in 1575. The earl of Leicester, his uncle, then introduced him at court, and he became one of queen Elizabeth's favourites. That princess sent him in 1576 to the emperor Rodolphus, and to other princes of Germany, when he behaved with such prudence and address, that the Poles afterwards proposed to elect him for their king, but queen Elizabeth would not consent to it. In 1579 he addressed the queen against her marriage with the duke of Anjou; and in 1581, when that treaty was renewed, was one of the tilers at the entertainment of the French ambassador; and at the duke of Anjou's departure attended him to Antwerp. In 1582 he received the honour of knighthood from her majesty, and in 1585 was sent into Flanders to the assistance of the Dutch, when he was made governor of Flushing, one of the cautiona-

ry towns delivered to her majesty, and general of horse, in both which posts he distinguished himself by his valour and prudence, particularly at his taking Axil, and his preserving the lives and honour of the English army at the enterprize of Gravelin: but at the stand made against the Spaniards before Zutphen, on the 22d of September, 1586, after having two horses killed under him, he was greatly wounded as he was mounting the third by a musket shot, which broke his thigh-bone. The horse he rode being extremely mettlesome, then forced him to forsake the field, tho' not his back, when passing along by the rest of the army where his uncle the general was, and being thirstily with excess of bleeding, he called for drink, which was presently brought him, but as he was putting the bottle to his mouth, he saw a poor wounded soldier carried along, who with a ghastly look fixed his eyes on the bottle, which Sir Philip perceiving, took it from his head before he had tasted it, and delivered it to the poor man, crying, "Thy necessity is yet greater than mine," and then having drank after him, was soon after carried to Arnheim, where he languished about twenty-five days, and died on the 16th of October, 1586.

The states of Zealand became suitors to the crown that they might have the honour of burying his body at the public expence of their government, but in this they were denied, for soon after his death his body was conveyed to Flushing, and being embarked with great solemnity, was landed at Tower-wharf on the 16th of November, and was interred with great pomp in St. Paul's cathedral the 16th of February following.

It is remarkable that in England the public were so afflicted at his loss, that for many months it was thought indecent in any gentleman to appear splendidly dressed. The University of Oxford wrote verses to his memory, printed in 1587; several writers of Cambridge, as well as others, wrote poems on his death; and many years after king James I. honoured him with an epitaph of his own composition. Sir Philip Sidney wrote *Arcadia*, a pastoral Romance, and a great many other pieces.

SIEGE, in the art of war, the encampment of an army round a place, in order to take it, either by formal attacks, or famine.

To form a siege, there must be an army sufficient to furnish five or six reliefs for the trenches, pioneers, guards, &c. also

B b 2 artillery

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artillery, and magazines furnished with a sufficient quantity of ammunition and provisions; and an hospital, for taking care of the wounded. To raise a siege, is to give over attacking a place; ordering the works and posts before it to be levelled.

SIEUR, a title of respect among the French, like *messier* among us: it is much used by the lawyers, as also by superiors in their letters to inferiors.

SIGATI GUSH, in zoology, the name of a Persian animal, of the lynx kind, and no way differing from the lynx itself, but in that it has no spots. Its ears have the fine velvety black pencil hairs a their top, which are the distinguishing character of the lynx; and these creatures differ so much in the variations and different dispositions of their spots, that probably this is no other than an accidental variety of the same species.

SIGHT, or **VISION**, in optics. See *eye* and *vision*.

SIGHTS, in mathematics, imply two thin pieces of brass, &c. placed perpendicularly on the two extremities of the index of a theodolite, circumferentor, &c. each of which has an aperture or slit in the middle, through which the visual rays pass to the eye, and distant objects are seen.

SIGMOIDES, a word used by medicinal writers to express any thing that is in the shape of the letter sigma. The valves of the heart have this epithet applied to them: the coracoid process of the scapula is also expressed by the same word; the semicircular cavity of the cubit, at the articulation of the fore-arm with the humerus, is sometimes also called the sigmoidal cavity; and the cartilages of the sigmoide circles of the aspera arteria, or wind-pipe, have their denomination from the same occasions.

SIGN, a sensible mark or character, denoting something absent or invisible.

SIGN, in algebra. See *Character*.

SIGN, in medicine, implies some appearance in the body, distinguishable by the senses, whence, by just reasoning, is inferred the presence, nature, state, event of health, a disease, or death. Those which indicate the present condition of a body, whether sick or well, dying or the like, are called diagnostic signs. Those which foretel the future state thereof, are called prognostic signs. And that sign which is peculiar to the disease, and inseparable from it, as arising from the na-

SIG

ture thereof, is called a pathognomonic sign.

SIGN, in astronomy, the twelfth part of the ecliptic, or a portion containing 30 degrees thereof. The ancients divided the ecliptic into twelve segments, called signs, which they denominated from the constellations, which at the time the names were imposed, were situated near those portions of the ecliptic. But the constellations, by the precession of the equinox, have changed their places, the constellation Aries being got into the sign Taurus, and the constellation Taurus into the sign Gemini, &c. The names and order of the twelve signs are as follow:

Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius, and Pisces, the first six of which are called northern signs, and the latter southern signs.

SIGN-MANUAL, in law, is used to signify any bill, or writing, signed by the king's own hand.

SIGNAL, a certain sign agreed upon for the conveying of intelligence, where the voice cannot reach.

Signals are given for the beginning of a battle, or an attack, usually with drums and trumpets; at sea they are given by firing guns, by lights, sails, flags, &c.

SIGNALS at Sea, are signs made by the admiral or commander in chief of a squadron of ships, either in the day or by night, whether for sailing, for fighting, or for the better security of the merchant ships under their convoy. These signals are very numerous and important; being all appointed and determined by order of the lord high-admiral, or lords of the admiralty, and communicated in the instructions sent to the commander of every ship of the fleet or squadron before their putting out to sea.

SIGNATURE, signing, a subscription, or the putting one's name at the bottom of an act or deed, in one's own hand-writing.

SIGNATURE of the Court of Rome, is a supplication answered by the pope, whereby he grants a favour, dispensation or collation to a benefice, by putting the fiat to it with his own hand; or the consensus is written in his presence. This signature at the bottom of the supplication, gives the name to the whole instrument.

SIGNATURE, in printing, a letter put at the bottom of the first page, at least, in each sheet, as a direction to the binder,

hinder, in folding, gathering, and collating them. The signatures consist of the capital letters of the alphabet, which change in every sheet: if there be more sheets than letters in the alphabet, to the capital letter is added a small one of the same sort, as A a, B b; which are repeated as often as necessary. In large volumes it is usual to distinguish the number of alphabets, after the first three or four, by placing a figure before the signature, as 5 B, 6 B, &c.

SIGNET, one of the king's seals, used for sealing his private letters, and signing all grants which pass his majesty's hand by bill.

SIGNIFICATION, the meaning or import of a word, phrase, sign, device, emblem, or the like.

In law, it is used for the notifying an act, &c. to the opposite party, by a copy thereof given and attested by the proper officer.

SIGNIFICAVIT, in law, a writ which issues out of the court of chancery, on a certificate given by the ordinary of a person's standing excommunicated forty days, in order to have him imprisoned till he submits to the authority of the church.

SILENI, in antiquity, a sort of heathen demi-gods, the same with satyrs, which were called Sileni, when they came to be advanced in age.

* **SILESIA**, a duchy, bounded on the north by the marquisate of Brandenburg and Poland, on the south by Moravia and Hungary, on the east by Poland, and on the west by lower Lusatia and Bohemia. It is two hundred and seventy-four miles in length, and one hundred in breadth. It is a rich, fertile country, and so well cultivated, that there is hardly a foot of land that does not bring some profit to its owner. There is but one large river in Silesia, which is the Oder. The lesser rivers are the Neisse, the Bober, the Queis, the Oppe, and the Else, all which fall into the Oder. A chain of mountains separates Silesia from Bohemia. There are here mines of silver, lead, copper, and iron. There have been found in different parts of Silesia precious stones.

SILIQUEA, in botany, the seed vessels, husk, pod, or shell of a plant of the leguminous kind.

SILIQUEOUS PLANTS, those which produce siliquæ, or seed pods.

SILK, a very soft, fine, bright, delicate, thread, the work of an insect called bombyx, or the silk-worm. In 555, two monks brought from the East-Indies, to

Constantinople, great quantities of silk-worms, with instructions for the hatching their eggs, rearing and feeding the worms, drawing out the silk, spinning and working it. Immediately manufacturers were set up at Athens, Thebes, and Corinth. About 1130, Roger, King of Sicily, established a silk manufactory at Palermo, and another at Calabria, managed by workmen whom he brought from Athens, Corinth, &c. which that prince had conquered in his expedition to the Holy Land. By degrees the rest of Italy and Spain learned from the Sicilians and Calabrians, the management of the silk-worms, and the working of silk; and at length, a little before the reign of Francis I. the French began to imitate them.

The great advantage flowing from this new manufacture, made king James I. very desirous of its being introduced into England; accordingly it was recommended several times from the throne, and in the most earnest terms, to plant mulberry trees, &c. for the propagation of silk-worms, but unhappily without effect; though from the various experiments inserted in the Philosophical Transactions, and other places, it appears, that the silk-worm thrives, and works as well, in all respects, in England, as in any other part of Europe.

The silk-worm is an insect not more remarkable for the precious matter it furnishes for divers stuffs, than for the many forms it assumes, before and after its being enveloped in the rich cod or ball it weaves itself. From a small egg about the size of a pin's head, which is its first state; it becomes a pretty large worm, or maggot, of a whitish colour, inclining to yellow. In this state it feeds on mulberry-leaves, till, being come to maturity, it winds itself up into a silken bag, or case, about the size and shape of a pigeon's egg; and becomes metamorphosed into an aurelia: in this state it remains without any signs of life, or motion; till at length it awakes, to become a butterfly; after making itself a passage out of its silken sepulchre. And, at last, dying indeed, it prepares itself, by an egg, or seed it casts, for a new life; which the warmth of the summer weather assists it in resuming. As soon as the silk-worm is arrived at the size and strength necessary for beginning his cod, he makes his web; for it is thus they call that slight tissue, which is the beginning and ground of this admirable work. This is his first days employment. On the second, he forms his folliculous

folliculous or ball, and covers himself almost over with silk. The third day he is quite hid, and the following days employs himself in thickening and strengthening his ball, always working from one single end, which he never breaks by his own fault, and which is so fine, and so long, that those who have examined it attentively, think they speak within compass, when they affirm that each ball contains silk enough to reach the length of six miles. In ten days time, the ball is in its perfection, and is now to be taken down from the branches of the mulberry-tree, where the worms have hung it. But this point requires a deal of attention, for there are some worms more lazy than others, and it is very dangerous waiting till they make themselves a passage, which usually happens about the fifteenth day of the month.

The first, finest, and strongest balls are kept for the grain, the rest are carefully wound; or if it is desired to keep them all, or if there be more than can be well wound at once, they lay them for some time in an oven moderately hot, or else expose them, for several days successively, to the greatest heats of the sun, in order to kill the insect, which, without this precaution, would not fail to open itself a way to go and use those new wings abroad, it has acquired within.

In general they only wind the more perfect balls; those that are double, or too weak, or too coarse, are laid aside, not as altogether useless, but that, being improper for winding, they are reserved to be drawn out into skains. The balls are of different colours; the most common are yellow, orange-colour, Isabella, and flesh colour; there are some also of a sea-green, others of a sulphur-colour, and others white; but there is no necessity for separating the colours and shades to wind them apart, as all the colours are to be lost in the future scouring and preparing of the silk.

Raw SILK, that taken from the ball without fire, and wound without any coction; such is most, if not all, that is brought into England from the Levant.

Boiled SILK, that which has been boiled in water, to facilitate the spinning and winding.

Spider SILK. — In the year 1710, Mr. Bonn discovered a method of procuring and preparing silk of the webs of spiders, and using it in several manufactures. After the death of Mr. Bonn, the French academy appointed the celebrated Reau-

mur to make a farther enquiry into this new silk work, who has raised several objections and difficulties against it, which are inserted in the Memoirs of the Academy for the year 1710. The sum of what he has urged amounts to this: the natural fierceness of the spiders, renders them unfit to be bred and kept together; four or five thousand being distributed into cells, 50 in some, 100, or 200 in others; the large ones kill and eat the less, so that in a short time there were left only one or two in each cell: and to this inclination of mutually eating one another Mr. Reaumur ascribes the scarcity of spiders, considering the vast number of eggs they lay. But this is not all: he even affirms, that the spider's bag is inferior to that of the silk-worm, both in lustre and strength; and that it produces less matter to be manufactured. The thread of the spider's web only bears a weight of two grains without breaking; that of the bag bears 36. The latter, therefore, in all probability, is eighteen times thicker than the former; yet it is weaker than that of the silk-worm, which bears a weight of two drams and a half. So that five threads of the spider's bag must be put together to equal one thread of the silk-worm's bag. Now, it is impossible these should be applied so justly over one another, as not to leave little vacant spaces between them, whence the light will not be reflected; and, of consequence, a thread, thus compounded, must fall short of the lustre of a solid thread. Add to this, that the spider's thread cannot be wound off, as that of the silk-worm may; but must, of necessity, be carded; by which means being torn in pieces, its evenness, which contributes much to its lustre, is destroyed. In effect, this want of lustre was taken notice of by M. de la Hire, when Mr. Bonn presented a pair of stockings to the academy.

SILICON, in fortification, an elevation of earth made in the middle of the moat, to fortify it, when too broad. It is generally called envelope.

SILVER, in natural history, the finest and most fixed of all metals, except gold. Silver is a soft, flexible metal, of little or no elasticity: by hammering it becomes moderately hard, elastic, and sonorous; more so than gold, less than copper or iron. Its specific gravity is to that of water nearly as 10½ to 1. It melts in a bright red heat, a little sooner than gold; and when in fusion, appears a perfect speculum. Like gold, it continues ductile

tile when heated as well as when cold; loses a little of its ductility by sudden cooling; proves brittle when heated by hammering; and regains its pristine malleability on being nealed, that is, slightly ignited and suffered to cool very leisurely. It seems to be perfectly fixed in the greatest degree of culinary fire; the small diminution, which in some experiments of this kind has happened at first, being apparently not of the silver itself, but of some other metal with which it had been debased.

Silver is the most perfect ductile, and fixed in the fire, of all metals after gold. A single grain has been drawn into a wire three yards in length; and the wire flattened into a plate an inch broad. In common fires, it suffers no diminution of its weight; and kept in the vehement heat of a glass-house furnace for a month, it loses no more than one sixty-fourth. In the focus of Tschirnhaus's large burning-glass, it smokes for a long while, then contracts a greyish ash on the surface, and at length is totally dissipated. The proper menstruum of silver is the nitrous acid; which if well dephlegmated, will dissolve equal its own weight: the solution stains the skin black. It likewise stains hair, bones, and other solid parts of animals, and different kinds of wood, of all the intermediate shades, from a light brown to a deep lasting black. The liquors commonly sold for staining hair brown and black, are no other than solutions of silver in aqua fortis, so far diluted with water as not sensibly to corrode the hair.

It gives a permanent stain likewise to sundry stones; not only to those of the softer kind, as marble; but to some of considerable hardness, as agates and jaspers. The solution, for this purpose, should be fully saturated with the metal; and the stone, after the liquor has been applied, exposed for some time to the sun.

Solution of silver, evaporated a little, shoots in the cold into crystals, intensely bitter and corrosive, and hence called by some *fel metallorum*, the gall of metals: the crystallization is promoted by dropping in a little spirit of wine before the liquor is set to shoot. The crystals, or the solution inspissated to dryness, melt in a small heat, and form on cooling a dark coloured mass still more corrosive, their phlegm having been dissipated in the fire. This mass is the lunar caustic, or infernal stone of the shops: for the

greater conveniency of using it as a caustic, it is commonly cast, in proper moulds, into slender cylindrical pieces. The crystals have been given internally, as purgatives and diuretics, and hence named catharticum lunare, and hydragogum angelicalæ: they are a medicine of great activity, too great to be taken with safety.

If solutions of silver be diluted with pure water, a considerable quantity of pure mercury added, and the whole set by in a cold place; there will form by degrees a precipitation and crystallization resembling a little tree, with its root, trunk, and branches, called arbor Dianæ, or the philosophic silver-tree. Lemery gives another method of making an arbor Dianæ, by adding to solution of silver some warm distilled vinegar.

Crystals of silver readily dissolve in water; and by the assistance of warmth, in spirit of wine. Exposed for some time to a moderately strong fire, they part by degrees with all the acid, and return into silver again; though scarcely without some little loss, unless borax or alkaline fluxes are added, to collect or reunite the particles of the metal. If laid on a burning coal, the nitrous acid, deslagrating with the inflammable matter, as this acid in all its combinations does, is quickly consumed, and the silver revived. I have not, says Mr. Lewis, observed in this experiment any considerable volatilization of the silver; though in the *Alta Nature Curiosorum*, tom. VI. there is a remarkable history of silver dissolved in the nitrous acid being volatilized in close vessels by means of charcoal. Four ounces of pure silver being dissolved in aqua fortis, and the solution set, to distil in an earthen retort; a white transparent butter arose into the neck, and nothing remained behind: by degrees the butter liquefied, and passed down into the phlegm in the receiver: the whole being now poured back into the retort, the silver arose again along with the acid: on adding sea salt to this volatilized solution, the silver was precipitated into a luna cornea. The volatilization being attributed to the liquor having stood in an elaboratory where charcoal was bringing in, the experiment was repeated with a fresh solution of silver mixed with a little powdered charcoal, with the same event.

Another kind of artificial vegetation, as it is called, may be produced, by spreading a few drops of solution of silver upon a glass-plate; and placing in the middle a small bit of any of the metals that

that precipitate silver, as particularly of iron. The silver quickly concretes into curious ramifications all over the surface of the plate. Other metallic solutions afford also vegetations on the same treatment, but none so elegant ones as that of silver.

Silver is precipitated from aqua-fortis by all the metals which dissolve in that acid, readily and copiously at first, but slowly and difficultly towards the end. The menstruum generally retains some portion of the silver, as the silver almost always does of the metal which precipitated it. The refiners, for recovering the silver from aqua-fortis after parting, employ copper. The solution, diluted with water, is put into a copper vessel, or into a glass one, with thin plates of copper, and set in a gentle warmth; the silver begins immediately to separate from the liquor in form of fine grey scales or powder; a part of the copper being dissolved in its place, so as to tinge the fluid more and more of a bluish green colour: the plates are now and then shaken, that such part of the silver as is deposited upon them may fall off and settle to the bottom. The digestion is continued, till a fresh bright plate, kept for some time in the warm liquor, is no longer observed to contract any powdery matter on the surface; when the liquor is poured off, and the precipitate washed with fresh parcels or boiling water. The small portion of silver, which the acid commonly still retains, may be precipitated by common salt: the copper which the silver retains may be in part scorified and separated by fusion with nitre. It is observable, that though the acid, in this process, saturates itself with the copper in proportion as it lets go the silver, yet the quantity of copper which it takes up is not near so great as that of the silver which it deposits. One dram of copper will precipitate three of silver, and saturate all the acid that held the three drams dissolved.

Absorbent earths, as chalk, or quick-lime, throw down a part of the silver, but leave a very considerable part suspended in the liquor. If the earth be moistened with the solution into the consistence of a paste, and exposed to the sun, it changes its white colour to a dark purplish black: distinct characters may be exhibited on the matter, by intercepting a part of the sun's light by threads, slit paper, &c. placed on the outside of the glass. Culinary fire does not affect its colour: after the mass has been exsiccated by this,

it changes as before upon being exposed to the sun.

Volatile alkaline spirits, added to a solution of silver, precipitate little. Pure fixed alkalies, and alkalies rendered caustic by quick-lime, throw down the whole. Fixed alkalies, impregnated with inflammable matter, by calcination with animal coals, occasion at first a considerable precipitation, but if added in larger quantity, take up great part of the metal again. Mr. Marggraf relates, that adulterated calces of silver totally dissolve both in a lixivium of these alkalies, and in volatile spirits; and that the marine acid precipitates the silver from the volatile, but not from the fixed alkaline solution. Kunckel reports, that the calx precipitated by volatile spirits, made with quick-lime, fulminates or explodes in the fire: and that by inspissating a solution of pure silver, melting the dry residuum, pouring on it spirit of urine, supersaturated with salt, and setting the mixture in a gentle warmth, a blood-red mass is produced, so tough as to be wound about the fingers.

The marine acid does not dissolve silver, but precipitates it from the nitrous. Upon adding to a solution of the metal made in aqua-fortis, either the pure acid of sea salt, or the salt in substance, or sal-ammoniac, the liquor instantly becomes milky, and, on standing, deposits the silver now combined with the marine acid into a white powder. This, when sufficiently washed with water, proves insipid, though containing so much acid as to weigh one fourth more than the silver employed. It does not dissolve in water; spirit of wine, aqua-fortis, or aqua-regis; but is in some small degree red-hot, and on cooling forms a ponderous brownish mass, which if cast into thin plates proves semi-transparent; and somewhat flexible, like horn: whence its name *luna cornea*. A stronger fire does not expel the acid from the silver; the whole concrete either arising in fumes, or sinking through the vessel without any separation of its parts: it may be sublimed like arsenic, with which it has, in many respects, a great analogy. If mixed with fixed alkaline salts, or inflammable substances, as oil or tallow, and melted in a crucible, the acid is absorbed or expelled, and the silver recovered pure.

The vitriolic acid also precipitates silver from the nitrous; but does not act upon silver in its metallic state, unless highly concreted and assisted by a boiling heat.

heat. The marine acid precipitates silver from the vitriolic, in the same manner as from the nitrous.

Luna cornea is most commodiously prepared, by diluting a solution of silver with ten or twelve times its quantity of water, and adding, by degrees, a solution of sea-salt, so long as it occasions any turbidness or milky hue. The whole is then to be set by till the white powder has settled; when the clear liquor is to be poured off, and the precipitate washed with fresh parcels of boiling water. If the silver contained any portion of copper, which it always does after the common methods of purification, that metal will here be separated, and left dissolved in the liquor; pure sea salt precipitating no metallic body but silver, lead, and mercury. Hence silver is brought, by this process, to a degree of purity scarce procurable by any other known means.

The silver may be recovered from the luna cornea, by fusion with alkaline and inflammable fluxes, or with certain metallic bodies; but in these operations there happens always a considerable loss of the silver; a part of the volatile calx being dissipated by the fire, before the alkali or metal can absorb its acid. Mr. Marggraf has discovered a method of reviving the silver with little or no loss; mercury, assisted by volatile salts, imbibing it by trituration without heat. One part of luna cornea and two of volatile salt are to be ground together in a glass mortar, with so much water as will reduce them to the consistence of a thin paste, for a quarter of an hour, or more: five parts of pure quicksilver are then to be added, with a little more water, and the triture continued for some hours. A fine amalgam will thus be obtained; which is to be washed with fresh parcels of water, so long as any white powder separates. Nearly the whole of the silver is contained in the amalgam, and may be recovered perfectly pure by distilling off the mercury: the white powder holds also a small proportion, separable by gentle sublimation: the matter which sublimes is nearly similar to mercurius dulcis.

Luna cornea totally dissolves in volatile alkaline spirits, without any separation of the matter. Exposed to the fire in a close copper vessel, it penetrates the copper, and tinges it throughout of a silver colour. Kunkel observes, that when carefully prepared, melted in a glass vessel, and suffered to cool slowly, to prevent its

cracking, it proves clear and transparent, may be turned in a lathe, and formed into elegant figures. He supposes this to be the preparation which gave rise to the notion of malleable glass.

Mercury very readily amalgamates with silver leaf. It easily unites likewise with the calx of silver, precipitated by copper; but does not touch the calces precipitated by salts.

The vapours of sulphureous solutions stain silver yellow or black. Sulphur melted with silver debases its colour to a leaden hue, renders it more easily fusible than alone, and makes it flow so thin, as to be apt, in a little time, to penetrate the crucible: in a heat just below fusion, a part of the silver shoots up, all over the surface, into capillary efflorescences. Aquafortis, the solvent of pure silver, does not act upon the silver, in this compound; but fixed alkaline salts, the menstruum of sulphur, may be made to absorb that ingredient; the alkali, however, when combined with the sulphur, will take up the silver again. If the sulphurated silver be mixed with mercury sublimate, and exposed to the fire, the mercury of the sublimate will unite with the sulphur, and carry it up in the form of cinnabar, whilst the marine acid of the sublimate unites with the silver into a luna cornea, which remains at the bottom of the glass: fire alone, continued for some time, is sufficient to expel the sulphur from silver.

Silver is purified from the baser metals by cupellation with lead. It always retains, however, after that operation, some small portion of copper, sufficient to impregnate volatile spirits with a blue tincture, which some have erroneously supposed to proceed from the silver itself. It is purified from this admixture by melting it twice or thrice with nitre and borax: the scoria, on the first fusion, are commonly blue; on the second, green; and on the third, white, a mark of the purification being completed. But the most effectual purification is the revival of silver from luna cornea.

Silver is purified and whitened extremely by boiling in a solution of tartar and common salt. This is no other than an extraction of the cupreous particles from the surface of the silver, by the acid of the tartar acuated with the common salt.

The silver employed for coins and utensils have always an admixture of copper,

which improves its hardness and sonorousness. Its degree of fineness is expressed among us by loths or half ounces: a mark contains sixteen half ounces; the silver is said to be of sixteen loths, when all the sixteen half ounces are pure silver; of fifteen, when only fifteen half ounces are pure silver, and the other copper, &c. Most of the other metallic bodies render it brittle; one part of tin destroys the malleability of above an hundred parts of silver; and regulus of antimony has this effect in a still greater degree. Both regulus of antimony and arsenic render a part of the silver volatile in the fire.

Silver discovers, in some circumstances, a great attraction to lead, though it does not retain any of that metal in cupellation, as gold does. If a mixture of silver and copper be melted with lead, in certain proportions, and the compound afterwards exposed to a moderate fire, the lead and silver will melt out together, bringing very little of the copper with them: by this method silver is often separated from copper in the large works. The effect does not depend wholly upon the different fusibility of the metals; for if tin, which is still more fusible than lead, be treated in the same manner, with a mixture of copper and silver, there will be no eliquation; the three ingredients here strongly attracting one another, so as to come all into fusion together. Again, if silver be melted with iron, and lead added to the mixture, the silver will forsake the iron to unite with the lead, and the iron will float by itself on the surface.

Precipitates or calces of silver melted with vitreous substances, impart to them a yellow colour. Kunckel observes, that when the glass is strongly stirred in fusion with an iron rod, or blown into vessels, it changes its uniform tinge into an opaque milkiness, variegated with yellow and other colours: the preparation of silver he employs is luna cornea. This, or the other precipitates, spread upon a glass plate, adhere and stain it yellow by ignition with fusion: hence their use in painting on glass.

The most beautiful enamel for porcelain hitherto discovered, communicated in the Philosophical Transactions; and the Swedish Acts, owes its colour to silver. A glass made from three parts of litharge and one of flint, is reduced into gross powder, and a solution of about one twentieth its weight of silver poured upon

it: the mixture is stirred together, evaporated and melted again, and when in thin fusion poured out. This composition, ground into fine powder, is applied on the porcelain previously heated; and the ignition continued under a muffle, till the powder melts, which is known by its glittering. The ware is then taken out of the furnace, and, whilst it continues red-hot, held over the smoke of burning vegetables, which calls forth the beautiful colour.

Silver is found in all countries; but most plentifully in America, particularly in Peru and Potosi, from whence large quantities are brought annually into Europe. It is met with either in its perfect metallic state, or in the form of ore, or blended in the ores of other metals.

Native malleable silver occurs not unfrequently in different stones, earths, and in most kinds of sands, in small pieces, of different figures, chiefly filaments or scales. It generally contains somewhat arsenical, but never holds any gold, though native gold is seldom free from silver.

The method of extracting SILVER from the Ore.—In order to extract silver from the ore, they first break it into pretty small pieces, and then grind it with iron pestles, weighing about two hundred pounds, and which commonly are moved by water. The ore, when pounded, is passed through a sieve of iron or copper, and then kneaded with water to a paste, which they leave to dry a little; afterwards they knead it a second time with sea-salt; and at last they throw some mercury upon it, and knead it a third time, in order to incorporate the mercury with the silver; being what they call an amalgama. Eight or ten days are sufficient for this process in temperate places; but in cold countries it sometimes requires a month or six weeks: they then throw the paste into large tubs or lavatories. In order to facilitate the operation, they constantly stir the paste with their feet, that when the water comes clear out of the basins, there may remain at the bottom only silver and mercury amalgamated together; and this is what they call pigma. They endeavour to extract the mercury which is not incorporated with the silver, by pressing the pigma, beating it strongly, or bruising it in a press or mill. There are pigmas of different sizes and of different weights: they commonly contain a third of silver, and

and two thirds of mercury. They lay the pigna upon a treves, placing it under a vessel full of water; and cover the whole with earth, in form of a cap, which they surround with burning coals. The action of the fire causes the mercury to evaporate from the pigna, and falls into the water, where it is condensed. The interstices which the mercury occupied in the pigna continue empty, and there remains only a porous and light mass of silver, compared with its former bulk.

Silver is likewise extracted from the ore in the following manner: they first break the ore; and sometimes wash it, to separate the stony particles which have been reduced to a powder: after this they calcine it, in order to extract from it the sulphur and arsenic: this is what they call roasting the ore: after which they wash it again, to free it from the calcined powder. The ore being thus prepared, they fuse it with lead or litharge, or with copperheads that have been used before; they employ granulated lead for this purpose, when the work is but small. The harder the ore is to melt, the more lead they mix with it, about fifteen or twenty parts of lead to one of ore. This process is called scorifying: the scoria consist of lead vitrified with the stone, and with whatever else is not gold or silver in the ore; and the metal precipitates into a regulus. If this regulus look pretty fine, and of a metallic colour they put it into the coppel: but if it still be mixed with scoria, and black, they melt it over again with a small quantity of glass or lead.

In order to separate the silver from the mercury, with which it is amalgamated, they have a furnace with an aperture at the top: this aperture they cover with a sort of dome made of earth in a cylindrical form, which may be kept on or taken away at pleasure. When they have put the mass of silver and mercury into the furnace, laid on the cover, and lighted the fire, the quicksilver rises in the form of vapours, and adheres to the dome, from whence they collect it, and use it again for the same purpose.

When the silver is well purified, so that all heterogeneous matter, either metallic or other, that might be mixed with it, is extracted, they say it is twelve carats fine. This is the expression they use to denote the quality of the purest silver, without any mixture or alloy; but, if there should remain any, they deduct the weight of the mixture from the principal weight, and the remainder shews the va-

lue of the silver. The carat consists of twenty-four grains; so that when to the weight of twelve carats there are twelve grains of mixture, the value of the silver is eleven carats twelve grains; and so of any other.

SILVER AGE, according to the poets, the reign of Jupiter, which succeeded that of Saturn, called the Golden Age. At that time the air was supposed to begin first to glow with sultry heat, the clouds to pour down hail and snow, while men, by the inclemency of the heavens, were driven for shelter to their caverns or sheds. Vice now began to spread its baleful influence among the human race, who were compelled to plow the land for their support, and to obtain bread by labour.

SILVER-LEAF, that beaten out into fine leaves for the use of the gilders, which is performed in the same manner as gold-leaf.

SHELL SILVER, is made with silver-leaf ground with new honey, and after pouring a small quantity of aqua fortis on it, the menstruum is poured off, and the silver kept for use.

SILVERING, the covering of any thing with silver. It is usual to silver metals, wood, paper, &c. which is performed either with fire, oil, or lize. Metal-gilders silver by the fire; painter-gilders all the other ways. To silver copper or brass: 1. Cleanse the metal with aqua-fortis, by washing it lightly, and immediately throwing it into fair water; or by heating it red hot, and scouring it with salt and tartar, and fair water, with a small wire brush. 2. Dissolve some silver in aqua-fortis, in a broad-bottomed glass vessel, or of glazed earth, then evaporate away the aqua-fortis over a chafing-dish of coals. 3. Put five or six times its quantity of water, or as much as will be necessary to dissolve it perfectly on the remaining dry calx; evaporate this water with the like heat; then put more fresh water, and evaporate again; and if need be, the third time, making the fire towards the latter end so strong, as to leave the calx perfectly dry, which, if your silver is good, will be of a pure white. 4. Take of this calx, common salt, crystal of tartar, of each a like quantity, or bulk, and mixing well the whole composition, put the metal into fair water, and take of the said powder with your wet fingers, and rub it well on, till you find every little cavity of the metal sufficiently silvered over. 5. If you would

have it richly done, you must rub on more of the powder, and in the last place wash the silvered metal in fair water, and rub it hard with a dry cloth.

SIMATIUM, or **SIMAISE**, in architecture. See *Cymatium*.

SINNA, the **MONKEY**. See *Monkey*.

SIMILAR Arches of a Circle, are such as are like parts of their whole circumference.

SIMILAR Bodies, in natural philosophy, are called such as have their particles of the same kind and nature one with another.

SIMILAR plane Numbers, those numbers which may be ranged into the form of similar rectangles; that is, into rectangles whose sides are proportional, such are 12 and 48; for the sides of 12 are 6 and 2, and the sides of 48 are 12 and 4. But $6 : 2 :: 12 : 4$, and therefore those numbers are similar.

SIMILAR Polygons, such as have their angles severally equal, and the sides about those angles proportional.

SIMILAR Rectangles, those which have their sides about the equal angles proportional.

1. All squares are similar rectangles.

2. All similar rectangles are to each other as the squares of their homologous sides.

SIMILAR Right-lined Figures, such as have equal angles, and the sides about those equal angles proportional.

SIMILAR Segments of a Circle, such as contain equal angles.

SIMILAR Conic Sections. Two conic sections of the same kind are said to be similar, when any segment being taken in the one, we can assign always a similar segment in the other.

SIMILAR Diameters of two Conic Sections. The diameters in two conic sections are said to be similar, when they make the same angles with their ordinates.

SIMILAR Solids, such as are contained under equal numbers of similar planes, alike situated.

SIMILAR Triangles, such as have all their three angles respectively equal to one another.

1. All similar triangles have the sides about their equal angles proportional.

2. All similar triangles are to one another as the squares of their homologous sides.

SIMILAR DISEASE, in medicine, denotes a disease of some simple, solid part of the body; as of a fibre with re-

gard to its tension or flaccidity; of a membrane; a nervous canal, or the like.

SIMILAR PARTS, in anatomy, those parts of the body which at first sight appear to consist of like parts, or parts of the same nature, texture, and formation; of these we usually reckon ten, viz. the bones, cartilages, ligaments, membranes, fibres, nerves, arteries, veins, flesh, and skin. See *Bone*, *Cartilage*, &c.

SIMILE, or **SIMILITUDE**, in rhetoric and poetry, a comparison of two things, which, though different in other respects, yet agree in some one. As, "He shall be like a tree planted by the water-side," &c.

SIMILITUDE, in arithmetic, geometry, &c. denotes the relation of two things similar to each other.

SIMONICAL, is applied to any person guilty of simony.

SIMONIANS, in church history, a sect of ancient heretics, so called from their founder Simon Magus, or the Magician.

SIMONY, in ecclesiastical law, the crime of buying or selling of spiritual gifts or preferments. In the ancient Christian church, this crime was always thought to be committed when men either offered or received money for ordinations. The apostolical canons lay a double punishment both of deposition and excommunication, on such of the clergy as were found guilty of it.

Against the corruption of simony, there have been many canons made in our own church, which punishes the offender with deprivation, disability, &c. and by a statute of the 31st Eliz. it is enacted, that if any person for any sum of money, reward, gift, profit, or benefit, or by reason of any promise, agreement, grant, bond, covenant, or other assurance, shall present, or collate any person to any benefice with cure, dignity, or living ecclesiastical, every such presentation, or collation, and every admission or induction thereupon, shall be utterly void, and the crown shall present for that turn; and the person that shall give or take any sum of money, &c. shall forfeit double the value of one year's profit of any such benefice; and the person so corruptly taking any such benefice, shall from thenceforth be disabled to have and enjoy the same.

SIMPLE, something not mixed or compounded; in which sense it stands opposed to compound. Thus we say, simple form, simple mode, simple sex, simple

simple force, simple equation, simple anomaly, simple glands, simple vision, simple flank, simple fraction, &c.

SIMPLE, in botany, a general name given to all herbs and plants; as having each its particular virtue, whereby it becomes a simple remedy.

SIMPLE CONCORDS, those wherein we hear at least two notes in consonance; as a third and fifth; and, of consequence, at least three parts.

SIMPLE COUNTER-POINT, a harmonical composition, wherein note is set against note; in opposition to figurative counter-point.

SIMPLEX BENEFICIUM, signifies an inferior dignity in a cathedral or collegiate church, a sine-cure, pension, or any ecclesiastical benefice, opposed to a cure of souls, and which therefore is consistent with any parochial cure, without coming under the denomination of pluralities.

SIMPLIFYING, in ecclesiastical matters, is the taking away the cure of souls from a benefice, and dispensing the beneficiary from residence.

* **SIMPSON, THOMAS**, fellow of the Royal Society, was born at Market-Bosworth, in Leicestershire, the 20th of August, 1710. His father being a weaver, and intending to bring him up to his own business, took so little care of his education, that he was only taught to read; but, on the 11th of May, 1724, there happened a great eclipse of the sun, which struck the mind of this youth with an ardent desire to know the reason of it, and to be able to foretell such surprising events. Five or six years after, being at the house of a relation, a pedlar and fortune-teller, took a lodging at the same house, and got money by telling of fortunes by judicial astrology. Young Simpson, who was now about nineteen years of age, looked upon this man as a prodigy, and endeavoured to ingratiate himself into his favour, while he was no less pleased with the abilities of the young man. The pedlar going to Bristol fair, left in the hands of young Simpson, who had now taught himself to write, Cocker's Arithmetic, to which was subjoined a short appendix on algebra, and a book of Partridge, the almanack-maker, on genitures; and these he had perused to such purpose during his friend's absence, as to excite his amazement on his return. Simpson soon after made a public profession of casting nativities; and entirely laying aside the business of weaving, soon became the oracle of Bosworth and its

neighbourhood. But at length being convinced of the vain foundation and fallacy of his art, he dropped the profession of being a fortune-teller, though he found it very lucrative. Being now furnished with enough arithmetic, algebra, and geometry, to qualify him for looking into the Ladies Diary, of which he had afterwards the direction, he came to know that there was still a higher branch of mathematical knowledge than any he had been yet acquainted with, and this was the method of fluxions; but he was entirely at a loss to discover any English author who had written on the subject, except Mr. Hayes; and his work being a folio, and then pretty scarce, he was unable to purchase it. However, an acquaintance lent him Mr. Stone's Fluxions, by means of which, and his own penetration, he was enabled, in a very few years, to compose a much more accurate treatise on that subject, than had ever before been published. After his bidding adieu to astrology and its emoluments, he was driven to great hardships to procure subsistence for his family, i.e. having married a widow with two children, who soon brought him two more. He therefore came up to London, and worked some time at his business in Spitalfields, and in his spare hours taught mathematics, which succeeded so well, that he went home and brought up his wife and children to settle in London. The number of his scholars now increasing, and his abilities becoming publicly known, he published proposals for printing by subscription, A new Treatise of Fluxions, with the Doctrine of infinite Series; and this work was published in 1737. In 1740, he published a Treatise on the Nature and Laws of Chance, in quarto; and the same year, a quarto volume of Essays on several curious and useful subjects in speculative and mixed mathematics; and, soon after, he received a diploma, by which he was constituted a member of the Royal Academy at Stockholm. In 1741, was published his Doctrine of Annuities and Reversions. He afterwards published a Treatise of Algebra, wherein the fundamental principles are fully and clearly demonstrated; to which he added the construction of a great number of geometrical problems, with the method of resolving them.

Through the interest of W. Jones, Esq; F. R. S. Mr. Simpson was, in 1743, appointed professor of mathematics in the king's academy at Woolwich; and soon after

after was chosen a member of the Royal Society; when the president and council, in consideration of his circumstances, were pleased to excuse his admission fees, and his giving bonds for the settled future payments. At the academy he exerted all his abilities in instructing the pupils. In his manner of teaching, he had a peculiar and happy address, a certain dignity and perspicuity, tempered with such a degree of mildness, as engaged the attention, esteem, and friendship of his scholars; he therefore acquired great applause from his superiors in the discharge of his duty. His application and close confinement, however, injured his health. Exercise and a proper regimen were prescribed to him, but to little purpose; for his spirits sunk gradually, till he became incapable of performing his duty. At length his physicians advised his native air for his recovery, and he set out in February, 1761, but was so fatigued by his journey, that, upon his arrival at Bosworth, he betook himself to his chamber, and grew continually worse till the day of his death, which happened the 14th of May, in the fifty-first year of his age. He left a son and daughter, the former an officer in the royal regiment of artillery; and the king, at the instance of lord Ligonier, in consideration of Mr. Simpson's extraordinary merit, was pleased to grant a pension to his widow, with handsome apartments adjoining to the academy; a favour never conferred on any before.

SIN, a breach or transgression of some divine law, or command.

SINAPI, or **SINAPIS**, mustard, in botany, a genus of plants, the corolla of which consists of four cruciform, roundish, plane, patent, and entire petals, with erect linear anthers, and scarcely the length of the cup; the fruit is an oblong, rough pod, consisting of two valves, and containing two cells: the seeds are numerous and globose. Mustard-seed is an attenuant and resolvent in a very high degree; it warms the stomach, and excites an appetite: but its principal medicinal use is external in sinapisms, applications made to certain parts when irritation is intended, but not blistering. It is usually mixed with horse radish root, and other ingredients of the same kind, for this purpose.

SINAPISM, in pharmacy, a cataplasm of mustard-seed, applied with a view of exciting a heat and redness of the skin.

SINCIPUT, in anatomy, the forepart of the head, reaching from the forehead to the coronal suture.

SINDON, in surgery, a little round piece of linen, silk, or lint, used in dressing a wound after trepanning.

SINE, or *right SINE of an Arch*, in trigonometry, is a right-line drawn from one end, or termination of an arch perpendicular to the radius drawn to the other termination of the arch; being always equal to half the chord of twice the arch. See *Circle*.

Whole SINE, sinus totus, the sine of 90 degrees, being equal to the radius or semidiameter.

SINE Complement, or *co-SINE of an Arch*, is that part of the diameter intercepted between the center and sine, and is equal to the sine of the complement of that arch.

versed SINE of an Arch, the part of the diameter intercepted between the sine and the periphery.

SINE-CURES, ecclesiastical benefices without cure of souls.

SINEW properly denotes what we call a nerve; though, in common speech, it is rather used for a tendon.

SINGING, the action of making divers inflexions of the voice, agreeable to the ear, and correspondent to the notes of a song, or piece of melody. The first thing to be done in learning to sing, is to raise a scale of notes by tones and semitones to an octave, and descend by the same notes; and then to rise and fall by greater intervals, a third, fourth, fifth, &c. and to do all this by notes of different pitch. Then these notes are represented by lines and spaces, to which the syllables *fa, so, la, mi*, are applied, and the pupil taught to name each line and space thereby; whence this practice is called *sol faing*.

SINGULAR NUMBER, in grammar, the first manner of declining nouns, and conjugating verbs; used when we only speak of a single person or thing. The Latins, French, English, &c. have no number but the singular and plural; the Greeks and Hebrews have likewise a dual.

SINGULTUS, in medicine, a convulsive motion of the midriff, commonly called hiccup. See *Hiccup*.

SINISTER, something on, or towards, the left hand. Hence, some derive the word sinister a *sinendo*, because the gods, by such auguries, permit us to proceed in our designs.

SINISTER,

S I R

SINISTER, in heraldry. The sinister side of an escutcheon is the left hand side; the sinister chief, the left angle of the chief; the sinister base, the left hand part of the base.

SINISTER ASPECT, among astrologers, an appearance of two planets happening according to the succession of the signs, as Saturn in Aries, and Mars in the same degree of Gemini.

SINKING FUND, a provision made by parliament, consisting of the surplusage of other funds, intended to be appropriated to the payment of the national debts; on the credit of which very large sums have been borrowed for public uses.

SINOPE, or **SENOPE**, in heraldry, denotes vert, or the green colour in armories.

SINUATED LEAF, in botany, a leaf which has a number of sinuses on its side, but those separated by lobes, not very long, nor themselves indented, or notched at the edges. *Sinuato-dentated leaf*, expresses a leaf like the former, but with the lateral lobes of a linear figure.

SINUOSITY, a series of bends and turns in arches, or other irregular figures, sometimes jetting out, and sometimes falling in.

SINUS, in anatomy, denotes a cavity in certain bones, and other parts, the entrance of which is very narrow, and the bottom wider and more spacious.

SINUS, in surgery, a little cavity, or sacculus, frequently formed by a wound or ulcer, wherein pus is collected. A sinus is properly a cavity in the middle of a fleshy part, formed by the stagnation and putrefaction of the blood or humours, and which has wrought itself some vent or exit.

SION-COLLEGE was founded by Dr. Thomas White in 1623, and incorporated in 1664.

SIPHON, or **SYPHON**, in hydraulics, a bended pipe, one end of which being put into a vessel of liquor, and the other hanging out of the said vessel over another, the liquor will run out from the first into the last, after the air has been sucked out of the external or lower end of the siphon, and that as long as the liquor in the upper vessel is above the upper orifice of the siphon.

SIRE, a title of honour in France, now given to the king only, as a mark of sovereignty. In all places and petitions, epistles, discourses, &c. to the king, he is addressed under the title of sire.

S I R

SIRE was antiently used in the same sense with *sieur* and *seigneur*, and applied to barons, gentlemen, and citizens.

SIREN, *Siren*, in antiquity, a mermaid; a name given to a kind of fabulous beings represented by Ovid, &c. as sea monsters with women's faces and fishes tails; and by others decked with a plumage of various colours. They are supposed to have been the three daughters of the river Achelous, and called Parthenope, Ligea, and Leucolia. Homer only makes mention of two Sirens, but others reckon five. Virgil places them on rocks, where vessels are in danger of splitting. Pliny makes them inhabit the promontory in Sicily, near cape Pelorus. Claudian says, they inhabited harmonious rocks; that they were charming monsters; and that sailors were wrecked on their rocks without regret, and even expired in rapture. Artedi supposes it to constitute a peculiar genus of ceraceous fishes. The character he gives of it is the following: it has no pinnated tail; the head, neck, and breast, down to the navel, represent those of the human species; there are only two fins on the whole body, and those stand on the breast. Bartholine, in his History of Curiosities, describes such a fish as this, under the name of Syrene, and Barchinensis under the name of *homio marinus*. This author says that he saw one at sea, and that it is wholly different from the manati, and from all other fishes. The Philosophical Transactions also contain an account of a sea man seen in the American seas, and several other writers of credit give countenance to the story. Their description tells us, that from the navel to the tail it is one shapeless mass of flesh, without any appearance of a finny tail, or any other part of the structure of a fish. The pectoral fins resemble hands, and are composed of five bones, or fingers, joined by a membrane. With these it swims. It were much to wished, that some accurate ichthyologist might have an opportunity of seeing and examining this creature, if it really exists different from the other animals of the sea. Artedi seems to doubt the truth of the accounts, but thinks it better not to judge of a thing not yet seen, than to pronounce any thing rashly against the accounts of creditable authors.

SIRIUS, in astronomy, the dog star; a very bright star, of the first magnitude.

in the mouth of the constellation canis major, or the great dog.

SISIPHUS, in fabulous history, one of the descendants of Æolus, married Me-ropé, one of the Pleiades, who bore him Glaucus. He lived at Epyra in Peloponnesus, and was a very subtle man. Others say that he was a Trojan secretary, who was punished for discovering secrets of state, and others that he was a notorious robber killed by Theseus. All the poets however agree that he was punished in Tartarus for his crimes, by rolling a great stone to the top of an hill, which constantly recoiled and rolling down incessantly renewed his labour.

SISON, corn parsley, or bishop's-weed, in botany, a genus of plants, the general corolla of which is uniform: the seed of this plant is one of the four lesser hot seeds of the shops, and is an attenuant, aperient, and carminative. It is prescribed in flatulencies and colics, and against obstructions of the menses; and is said also to be a lithontriptic.

SISYMBRIUM, water-cresses, in botany a genus of plants, the corolla whereof consists of four cruciform, oblong, erecto patent petals, oftentimes less than the cup, with a great number of unguis: the fruit is a long, crooked, cylindrical pod, consisting of two valves, and containing two cells: the seeds are numerous and small. The young leaves of this plant are frequently eaten in spring as a salad: the whole plant is of an acid taste, and is a powerful attenuant and resolvent. It is recommended as a kind of specific in the scurvy, and is eaten in large quantities for that intention with great success. It is good against obstructions of the viscera, and consequently in jaundices, and many of the chronic diseases. It is also a powerful diuretic, and promoter of the menses: the best way of using it is in manner of a salad, or by drinking the expressed juice, which is at present much a custom with us in spring with that of brook-lime, &c.

SITE, or **SCITE**, the situation of a house, messuage, &c. and sometimes the ground-plot, or spot of earth it stands on.

In logic, **situs** is one of the predicaments declaring a subject to be so and so placed: and in geometry and algebra, it denotes the situation of lines, surfaces, &c.

Sium, water-parsnip, skirret, and ninnin, in botany, a genus of plants, the general corolla of which is uniform: the partial one consists of five inflex equal petals: the fruit is naked, and of an

oval or roundish figure, small, striated, and separable into two parts: the seeds are two, roundish, striated and convex on the one side, and plane on the other. The leaves of this plant, eaten either crude or boiled, are said to break and expel the stone; to excite urine and the menses; to promote the expulsion of the fœtus; and to be good in a dysentery.

SIXTH, in music, one of the simple original concords, or harmonical intervals.

SIZE, the name of an instrument used to find the bigness of fine round pearls withal. It consists of thin pieces or leaves, about two inches long and half an inch broad, fastened together at one end by a rivet. In each of these are round holes drilled of different diameters. Those in the first leaf serve for measuring pearls from half a grain to seven grains; those of the second, for pearls from eight grains, or two carats, to five carats, &c. and those of the third, for pearls from six carats and a half to eight carats and a half.

SIZE is also a sort of paint, varnish, or glue, used by painters, &c. The shreds and parings of leather, parchment, or vellum, being boiled in water and strained, make size. This substance is used in many trades. Mr. Boyle mentions among other uses, that fine red stands and hanging shelves are coloured with ground vermilion tempered with size, and when dry are laid over with common varnish. There is also a size made of ising-glass, in the same manner, and for the like purposes; but this size will not keep above three or four days, so that no more should be made of it at once than present occasion requires. The manner of using size is to melt some of it over a gentle fire, and scraping as much whitening into it as may only colour it, let them be well incorporated together; after which you may whiten frames, &c. with it. After it dries, melt the size again, and put more whitening, and whiten the frames, &c. seven or eight times, letting it dry between each time: but before it is quite dry, between each washing, you must smooth and wet it over with a clean brush-pencil in fair water.

To make gold-size, take gum animi and asphaltum, of each one ounce; minium, litharge of gold, and umber, of each half an ounce; reduce all into a very fine powder, and add to them four ounces of linseed-oil, and eight ounces of drying-oil; digest them over a gentle fire that

What does not flame, so that the mixture may only simmer, but not boil; for fear it should run over and set the house a fire, keep it constantly stirring with a stick till all the ingredients are dissolved and incorporated, and do not leave off stirring it till it becomes thick and ropy; and being boiled enough, let it stand till it is almost cold, and then strain it through a coarse linen-cloth and keep it for use.

To prepare it for working, put what quantity you may have occasion to use in a horse-muscle shell, adding so much oil of turpentine as will dissolve it, and making it as thin as the bottom of your seed-lac varnish; hold it over a candle, and then strain it through a linnen-rag into another shell; add to these so much vermilion as will make it of a darkish-red: if it is too thick for drawing, you may thin it with some oil of turpentine. The chief use of this size is for laying on metals.

The best gold-size for burnishing is made as follows: take fine bole, what quantity you please, grind it finely on a marble, then scrape into it a little beef-suet: grind all well together; after which mix a small proportion of parchment-size with a double proportion of water, and it is done.

To make silver-size: take tobacco pipe clay, in fine powder, into which scrape some black lead and a little Genoa-soap, and grind them all together with parchment-size, as already directed.

SKELETON, in anatomy, an assemblage or arrangement of all the bones of a dead animal, dried, cleansed, and disposed in their natural situation, and kept in that order by means of wires, &c.

* **SKIE**, an island in Scotland, and one of the largest of the western islands. It is about sixty miles in length, and twenty in breadth, and is divided from the counties of Ross and Inverness by a narrow channel, thirty-five miles in length, and ten in breadth. It is cut into a great number of gulphs and promontaries, and there are seven high mountains near each other in the middle of the island. The vallies are fruitful in pastures, and produce plenty of barley and oats. The sea about it is full of fish.

SKIN, *Cutis*, in anatomy. See *Cutis*.

SKIN, in commerce, is particularly used for the membrane stripped off the animal to be prepared by the tanner, skinner, currier, parchment maker, &c. and converted into leather, &c.

Skins of beasts manufactured become parchment and vellum; leather, of which

are made shoes and boots, saddles, harnesses, and furniture for horses, gloves and garments, coaches and chairs, household-stuff, covers of books, drinking vessels, &c. and furs for cloathing, hats, caps, &c. Those branches of trade that are derivable from the skin-trade, render it a very great mercantile concern, and well deserving preservation as much as we can within ourselves. The English have greatly encreased their quantity of furs and skins of all sorts from their northern colonies, since they planted northwards towards Nova-Scotia, Annapolis, and other places towards the river Canada. The several sorts of skins brought to Europe from those parts are the following kinds, viz. deer-skins, bear, beaver, otter, racoon, fox, elk, cat, wolf, martin, mink, musqueth, silver, &c.

SKINNER, one who works and deals in skins.

SKIRMISH, in the art of war, a disorderly kind of combat or encounter, in presence of two armies, between small parties, or persons, who advance from the body for that purpose, and introduce to a general and regular fight.

* **SKULL**, *Cranium et calvaria*, in anatomy, that part of the head which forms its great bony cavity; and in a living subject contains the brain. The shape of the skull is oval: its exterior surface is convex, and its interior concave; its round figure is an advantage to its capacity: it is a little depressed and longish, advancing out behind, and flattened on the two sides that form the temples, which contributes to the enlargement of the sight and hearing: it is of unequal thickness in the several parts, and is composed of two lamellæ, or tables, an exterior and interior, laid or applied over each other, between which there is a diplœ, or medullium, being a thin spongy substance, made of bony fibres, detached from each lamina, and full of little cells of different bignesses: the tables are hard and solid, the fibres being close to each other: the diplœ is soft, in regard the bony fibres are here at a greater distance; a contrivance whereby the skull is not only made lighter, but less liable to fractures: the external lamina is smooth, and covered with the pericranium; the internal is likewise smooth, abating the furrows made by the pulsation of the arteries of the dura mater before the cranium be arrived at its consistence: it has several holes, through which it gives passage to the spinal marrow, nerves, a ste

sies, and veins, for the conveyance and reconveyance of the blood, &c. between the heart and the brain. The bones of the skull are eight, viz. the os frontis, the two parietal bones, the two bones of the temples, the occipital, the sphenoids, and the ethmoides; each of which are described under their several names. All the bones of the cranium are found to be imperfect in newborn infants; the sinus and its medullarium are almost wholly wanting; the bony fibres in the formation of almost all of them are carried in form of rays from a center towards the circumference; and most of them are not single, as in adults, but composed each of several frustules, or little pieces; nor are the sutures at that time formed, and frequently there are triquetrous little bones between them. In adults the several bones of the skull are in general joined by sutures: these sutures are either common or proper: the proper sutures are distinguished into the true, and the false or spurious; they are called true sutures when the bones are joined together by means of a multitude of unequal denticulated eminences, forming an appearance somewhat like the edge of a saw: these denticulations enter mutually into each other's sinuses, and on the outside are most plainly visible: of this kind are those called the coronal, sagittal, and lambdoidal sutures.

The false or spurious sutures are those squamose ones of the temporal and parietal bones, and of the os frontis and sphenoids, in the angle where they unite with the parietal ones. The common sutures are the transversal one, which joins the os frontis with the bones below it, the sphenoidal, the ethmoidal, and the zygomatic; but these are of little moment. Some authors mention the having met with skulls in which there were no sutures at all. Between the sutures, particularly the lambdoidal and sagittal, there are found, in many skulls, certain small bones; these are called, by some, ossa triquetra, from their figure; by others, ossa wormiana: they are uncertain in their figures and situation, and are joined to the others by sutures: these bones are by some esteemed a great medicine in epilepsies.

The use of the sutures is, 1. That the dura mater may in those parts be very firmly joined to the cranium and pericranium. 2. That, in infants, the head may the more easily be extended in its growth from the several bones being

at that period disunited at these places. 3. That the transpiration from the brain may be the more free and easy at that time of life in which they are open, and at which also the habit is more humid. 4. That very large fractures of the skull might in some measure be prevented: and finally, there is another advantage in their openness in children, namely, that medicinal applications to the external part of the head may penetrate and do service.

The foramina in the cranium are numerous, and their uses important: these are divided into the external and internal: by the external are meant those which are easily discovered on the external surface of the skull; and by the internal are meant those which are most obvious in the internal surface. Of the larger internal foramina we count eleven pair, affording passage to the arteries, veins, and nerves of the brain: besides these, we are to remark one which is single, namely, the great foramen of the occipital bone, that gives passage to the medulla spinalis, and with it to the accessory spinal nerves, and to the vertebral arteries. Particular regard is to be had to the first pair of these foramina, which may indeed be more properly called a congeries of the foramina of the os cribrosum; these give passage to the filaments of the first pair of nerves, called the olfactory nerves: the second pair are in the sphenoidal bones, and give passage to the optic nerves: the third pair are called the unequal and lacerated foramina, and give passage to the third and fourth pair of the nerves, to the first branch of the fifth pair, and to the sixth pair; as also to the emissary of the receptacles of the dura mater: the fourth pair are in the sphenoidal bone, and give passage to the second branch of the fifth pair of nerves, which is distributed to the several parts of the upper jaw: the fifth, or oval foramina, give passage to the third branch of the fifth pair, and to the emissary of the dura mater: the sixth is a very small foramen, and admits of an artery, which is distributed over the dura mater, and is that which forms the impressions of little shrubs or trees on the parietal bones: the seventh is placed between the sella equina and the petrose apophysis, and it transmits no vessels, but is shut up by the dura mater: the eighth pair of foramina give passage to the carotid arteries, whence it is called the carotid foramen; and the intercostal nerve has its egress also at this opening:

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opening: through the ninth, which is in the os petrosum, passes the auditory nerve: through the tenth, which is between the os petrosum and the occipital bone, pass the parvagus and the lateral sinuses of the dura mater, together with the spinal nerve: the eleventh is in the os occipitis, near the edge of the foramen magnum; and through this pass the ninth pair of nerves, called the lingual.

Besides these foramina, there are a number of little ones in the os petrosum, often very visible; one of these carries back a branch of the auditory nerve to the dura mater; and the other principal one transmits the sanguiferous vessels to the labyrinth, or the internal organ of hearing. See *Ear*.

Of the external foramina, there are two proper ones of the os frontis, a little above the orbits; these are, from their situation, called *supra orbitalia*: they give passage to the ophthalmic nerve of Willis. Besides these there are four other foramina common to the os frontis, and to the plane or papyraceous bones of the orbit; two of these are placed on each side, and they transmit little nerves and vessels to the sinus of the ethmoidal bone. In the parietal bone there is one, which serves for the passage of a vein from the cutis of the cranium into the sagittal sinus of the dura mater, or from the sagittal sinus to the external veins of the head; but this is often wanting. In each of the ossa temporum there are three common foramina; the first of these is the foramen jugale, which serves for the passage of the *crotophite* muscle; the second is large, in which is the sinus of the jugular vein; and the third is the ductus Eustachii, situated between the petrosum and the sphenoides, and leading from the mouth into the internal ear. Besides these common foramina of the ossa temporum, there are also three proper ones: 1. The *meatus auditorius*. 2. The aqueduct of Fallopius, situated between the mastoid and styloid process, and transmitting the hard portion of the auditory nerve. 3. A foramen behind the mastoid process, serving for the ingress of a vein into the lateral sinus, or for the egress of one from the lateral sinus into the veins of the occiput. In the occipital bone there are two foramina, situated behind the condyloid apophyses, and serving to give passage to the vertebral veins, into the lateral sinuses of the dura mater: these, however, are wanting in

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many skulls. In the sphenoides, besides the internal ones already described, are the apertures of the sinuses into the nostrils, common to them with the bones of the palate, and which are the apertures of the nares and fauces: there is another canal in the upper part of the pterygoid process, serving for the passage of the novum emissarium of the dura mater. In the os ethmoides there are, 1. Those common to this bone with the os frontis, situated in the interior side of the orbit, and already described. And, 2. The apertures of the ethmoidal sinuses into the nostrils. In the examination of different skulls, other foramina, besides these, will occasionally be found in different places; but these are either extraordinary and *lusus naturæ*, as is often the case; or they are otherwise such as serve only to give passage to vessels serving for the nutrition of the bones in which they stand.

Concealed Injuries and Wounds of the SKULL. When a blunt instrument is the occasion of any injury of the cranium, if the injured part does not sufficiently appear of itself, great industry is necessary to discover it. Where the common integuments appear tumid and soft, they are in this case to be divided to the bone; but in making the incision, care must be taken not to lay too much stress upon the knife, lest splinters of the fractured cranium should, by that means, be forced upon the brain. The best way to make this incision, according to Heister, is in form of the letter X, and about an inch and half in length, lifting up the skin at each angle, and leaving the bone bare. The blood that is spilt, may be taken up by a sponge, and dry lint stuffed between the skin and the cranium: and having thus found out the injured part of the cranium, the trepan is to be applied, if it be found necessary. If splinters of the bone are now found, they must be removed either with the fingers or forceps; or, when they hang to the pericranium, with scissors; but when they adhere pretty firmly to the neighbouring parts of the cranium, it is more advisable to replace them, than to endeavour to remove them by violence. In wounds of the cranium, or skull, the first business is to find whether they are terminated in the external parts of the cranium, or whether they penetrate into its cavity: this is to be known, 1. By the eye. 2. By the probe; which, however, must be gently used here, for fear of bringing on

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farther mischief. 3. By examining the instrument with which the blow was given, and considering the degree of force with which it was impelled. And, lastly, the presence or absence of very bad symptoms: for a violent blow upon the head will always be attended with vomitings and vertigos, and blood will be discharged from the nose, ears, and mouth, and the wounded person will lose his speech and senses. These disorders will appear, sometimes sooner and sometimes later, but are always most violent, when the wound is by a fall or by some blunt instrument; in which cases the cranium is usually much shattered. The blood which discharges itself by the wound, that is made by a sharp instrument, will insinuate itself between the common integuments and the cranium: in the contusions that are made with blunt instruments, sometimes it will be concealed under the cranium; and, by corrupting the pericranium and the cranium, will bring on ulcers and caries of the bone, and frequently occasions fevers, convulsions, and death.

SKY, the blue expanse of air, or atmosphere. Sir Isaac Newton attributes the azure colour of the sky to vapours beginning to condense therein, which have attained consistence enough to reflect the most reflexible rays, viz. the violet ones; but not enough to reflect any of the less reflexible ones. M. de la Hire attributes it to our viewing a black object, viz. the dark regions beyond the limits of the atmosphere, through a white or lucid one, viz. the air illuminated by the sun: a mixture of black and white always appearing blue. But this conjecture is not originally his, being as old as Leonardo da Vinci.

SLAB, an outside sappy plank or board sawed off from the sides of a timber tree: the word is also used for a flat piece of marble.

SLABS of Tin, the lesser masses, which the workers at the tin mines cast the metal into: these are run into moulds made of stone.

SLACKEN, in metallurgy, a term used by the miners to express a spongy and semi-vitrified substance, which they use to mix with the ores of metals, to prevent their fusion. It is the scoriz or scum, separated from the surface of the former fusion of metals. To this they frequently add lime-stone, and sometimes a kind of coarse iron-ore, in the running of the poorer golden ores.

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SLATE, a bluish fossil stone, very soft when dug out of the quarry, and therefore easily cut or sawed into thin long squares, to serve instead of tiles for the covering of houses; also for making tables, &c.

SLAVE, a person in the absolute power of a master, either by war or conquest. Menage and Vossius derive the word from *Sclavi*, the name of a Scythian people, whom Charlemagne condemned to a perpetual imprisonment; whence the Italians formed their *schlavo*, the Germans their *selawe*, the French their *esclave*, and we *slaves*.

SLAUGHTER. See *Man-slaughter*, *Homicide*, &c.

SLAUGHTER-SKINS, a term used by our curriers and leather-dressers for the skins of oxen or other beasts, when fresh, and covered with the hair: such as they receive them from the slaughter houses, where the butchers slay the carcass.

SLEDGE, a kind of carriage without wheels, for the conveyance of very weighty things, as huge stones, &c.

This is also the name of a large smith's hammer, to be used with both hands. Of this there are two sorts; the uphand sledge, which is used by under-workmen, when the work is not of the larger sort; it is used with both the hands before, and they seldom raise it higher than their head; but the other, which is called the about-sledge, and which is used for battering or drawing out the largest work, is held by the handle with both hands, and swung round over their heads at their arms end, to strike as hard a blow as they can.

SLEEP, that state wherein the body appearing perfectly at rest, external objects move the organs of the sense as usual, without exciting the usual sensations. Every one knows that in sleep there is a cessation from action. When waking, we walk, discourse, move this or that limb, &c. but, in natural and undisturbed rest, there is nothing of all these; being awake, we perform several motions by the voluntary contraction of our muscles; when asleep, those muscles only are contracted, whose action is, in a manner, involuntary, or to which the mind has always so constantly determined the spirit, that it does it by a habit, without the intervention of the reasoning faculty; such are those of the heart and breast. So that there is, at this time, a relaxation or looseness of the moving fibres of the several

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ral members, or, at least, such a quiet position and state of them, by which all the antagonist muscles are in an æquilibrium and equality of action, not overpowering one another. For this, indeed, seems to be one great design of sleep, to recover to the parts overstretched with labour their former tone and force; and, therefore, we do naturally, when composing ourselves to rest, put our body in that posture which most favours the particular wearied limbs, and conduce to this end. In the next place, it is very plain that there is in sleep, not only a rest and suspension from acting of most of our bodily organs, but even of our thinking faculty too; that is to prevent cavils, a ceasing from such thoughts as when waking we are exercised about, which we do reflect upon, and will, to employ our mind with: for though dreams are thoughts, yet they are but imperfect and incoherent ones, and are, indeed, either so faint and languid representations, as to be consistent with our sleep as some may be; or else, if they be strong and lively, they are, as every one knows, the interruption and disturbance of it.

From hence it will follow, that the motion of the arterial fluid must be, *cæteris paribus*, more sedate, even, and regular in the time of sleeping, than waking; for, besides the various alterations which, in the latter state, this receives from the several passions of the mind, the very contractions of the muscles themselves, in exercises of the body, do differently forward its course; whereas, in sleep, the force of the heat and pectoral muscles, being more constant and uniform, gives it a more calm and equally continued impulse.

Hence, also, it will come to pass, that the influx of the liquor of the nerves into the organs of the body, as also its reflux towards the brain, is, in sleep, either none, or very inconsiderable; that is, that this fluid has, at this time, but little or no motion: for it is muscular action and sensation that require it to be thus determined, this way or that, which are now hardly any; and yet, by the arrival of the blood at the brain, this juice will still be separated there, fit to be derived into its canals or tubes: so that, by this means, there will be a kind of accumulation, or laying up in store of spirits for the offices and requirements of waking.

Thus we may, in short, look upon this time as the time of wearing out, or the destruction of the animal fabric; and the time of the sleep, as that in which it is

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repaired and recruited; and not only on the account we have just mentioned concerning the nervous liquor, but also with respect to all the other parts, as well fluid as solid; for action does necessarily, by degrees impair the springs and organs; and in motion something is continually abraded and struck off from the distractile fibres, which cannot be otherwise restored, than by their being at rest from tension. Besides that, such a regular and steady course of the blood as we have observed to be in sleep, is by far more fit and proper for nutrition or an apposition of parts to the vessels, which an uneven hurry of it is more apt to tear off and wash away.

SLEEPER, or the **GREAT SLEEPER**, in zoology, the hairy-tailed mus, with red feet. This animal is of the size of the rat, but more corpulent; the head is short and thick; the opening of the mouth small; the nostrils flesh-coloured; the eyes large, black and prominent; and the ears large and naked. It is frequent in many parts of Europe, and retires in winter into caverns under the ground, where it carries however a considerable store of nuts and other fruits.

SLEEPERS, in natural history, a name given to some animals which sleep all the winter: such as bears, marmotes, dormice, bats, hedge-hogs, swallows, &c. These do not feed in winter; have no sensible evacuations, breathe little or not at all, and most of the viscera cease from their functions. Some of these creatures seem to be dead, and others to return to a state like unto that of the fœtus before birth. In this condition they continue, till by length of time maturing the process, or by new heat, the fluids are attenuated, the solids stimulated, and the functions begin where they left off.

SLEEPERS, in the glass trade, the large iron bars crossing the smaller ones, and hindering the passage of the coals, but leaving room for the ashes.

SLICH, in metallurgy, the ore of any metal, particularly of gold, when it has been pounded, and prepared for farther working.

SLIDING, in mechanics, is when the same point of a body, moving along a surface, describes a line on that surface.

* **SLIGO**, a county of Ireland, in the province of Connaught, bounded on the north by the ocean, on the east by Leitrim, on the south by Roscommon, and on the west by Mayo. It is about thirty-five miles in length, and forty-four in breadth,

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breadth, and is a proper country for raising and feeding of cattle. There is but one market-town in the county, which is Sligo the capital. It is seated on a bay of the same name, and has a commodious harbour, and a strong castle. It is ninety-five miles north-east of Dublin.

SLING, *Funda*, an instrument serving for casting stones with great violence. The inhabitants of the Balearic islands were famous in antiquity, for the dexterous management of the sling.

SLIPPING, among gardeners, the pulling off a sprig from a branch, or a branch from an arm of the tree. And so a slip may have its rinds double and treble slipped, or its stalks ragged.

* SLOANE, (Sir HANS,) baronet, an eminent physician and naturalist, was of Scotch extraction, and born at Killilagh, in the north of Ireland, in 1660. The very first bent of his genius he directed to the knowledge of nature, and this was encouraged by a proper education. He chose physic for his profession, and to attain a perfect knowledge of its several branches, repaired to London where he attended all the public lectures of anatomy and medicine, learned chemistry, and studied botany in Chelsea garden. After spending four years in London he went to Paris, where he attended the hospitals, and heard the lectures of M. Tournefort, the celebrated botanist, of du Verney, the famous anatomist, and other eminent masters. He then went to Montpellier, and having spent a year there in collecting plants, travelled through Languedoc with the same view, and in 1684 returned to London, when he transmitted to Mr. Ray a great variety of plants and seeds, which he has described, with proper acknowledgments, in his *Historia Plantarum*. About this time he became acquainted with Dr. Sydenham, who took him into his house, and recommended him in the warmest manner to practise. Soon after he was chosen a fellow of the Royal Society and of the College of physicians. But his desire to make new discoveries in the productions of nature, induced him to make a voyage to Jamaica in quality of physician to Christopher, duke of Albemarle, governor of that island; and though he staid there but fifteen months, he brought from thence such a variety of plants, as greatly surprized Mr. Ray, who did not think there had been so many to be found in both the Indies.

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He now applied himself closely to his profession, and on the first vacancy was chosen physician to Christ's hospital, upon which he applied the money he received from his appointment to the relief of those who were the greatest objects of compassion in the hospital, being unwilling to enrich himself by the gains he made of giving health to the poor. In 1693 he was chosen secretary to the Royal Society, and immediately revived the publication of the Philosophical Transactions, which had been omitted for some time, and continued to be the editor of them till the year 1712. As in his earliest days he had been fond of natural knowledge, he enriched his cabinet with every thing that was curious in art or nature. The sense which the public entertain of this learned physician's merit evidently appears by the following honours conferred upon him. He was created a baronet by king George I. chosen a foreign member of the Royal Academy at Paris, president of the Collège of Physicians, and, on the death of sir Isaac Newton, president of the Royal Society. He was the first in England who introduced the use of the bark into general practice, not only in fevers, but in a variety of other distempers, particularly in nervous disorders, in mortifications, and in violent hæmorrhages. Having faithfully discharged the respective duties of the places he enjoyed, he retired in 1740, at eighty years of age, to Chelsea, to enjoy in a peaceful tranquillity, the remains of a well-spent life. It is remarkable, that at sixteen years of age he had been seized with a spitting of blood, which confined him to his chamber for three years, and that he was always subject to it, yet by his sobriety, temperance, and moderation, with the occasional use of the bark, he protracted his life to a great length, without even feeling the infirmities of old age; and after a short illness of three days, died on the 11th of January, 1752, in his ninety-first year. In his person he was tall and well proportioned, in his manners easy and engaging, and in his conversation sprightly and agreeable. He was a liberal benefactor to the poor, and a governor of almost every hospital about London, to each of which he gave one hundred pounds in his life-time, and at his death a more considerable sum. He zealously promoted every proposal that had for its object the public good. He gave the apothecaries company the entire freehold of

of their botanical garden at Chelsea, in the center of which is a statue of him in marble, admirably well executed by Mr. Rysbrack. His noble cabinet of curiosities he bequeathed to the public, on condition that the sum of 20,000*l.* should be paid to his family; and also his library, consisting of above 50,000 volumes, 347 of which were illustrated with cuts coloured from nature, and 3566 manuscripts. He wrote the Natural History of Jamaica, in two volumes folio.

SLOATH, or **SLOTH**, in natural history, an animal remarkable for its slow motion. The face of this creature is covered with hair; the claws are of a subulated form; there are no ears, nor are there any middle teeth. This is a very extraordinary animal, both in figure and qualities. It is hard to say to what other it is equal in size, since it is like none in shape; the length of the body is about a foot, and when well fed its thickness is equal to its length; the feet are flatted or plain, in the manner of those of the bear or monkey, but are extremely narrow; the claws are very long and sharp; the head is small and round; and the face something resembling that of the monkey; the colour of the whole animal is a pale greyish brown. This creature is so very tedious in all its motions, that it will be three or four days in climbing up and coming down a tree, and does not go the length of fifty paces upon even ground in a day.

SLOUGH, a deep muddy place. The cast skin of a snake, the damp of a coal-pit, and the scar of a wound, are also called by the same appellation.

SLOW-WORM, in zoology the English name of the *cæcilia*, called also the blind-worm, and by some the deaf adder: it is very venomous, and its bite often fatal.

SLUICE, in hydraulics, a frame of timber, stone, earth, &c. serving to retain and raise the water of the sea, a river, &c. and on occasion to let it pass: such is the sluice of a mill, which stops and collects the water of a rivulet, &c. in order to discharge it at length, in greater plenty, upon the mill-wheel: such also are those used in drains to discharge water off lands; and such are the sluices of Flanders, &c. which serve to prevent the waters of the sea overflowing the lower lands, except when there is occasion to drown them.

Sometimes there is a canal between two gates or sluices, in artificial navigation, to

save the water; and render the passage of boats equally easy and safe, upwards and downwards; as in the sluices of Briare in France, which are a kind of massive walls, built parallel to each other at the distance of twenty or twenty-four feet, closed with strong gates at each end, between which is a kind of canal or chamber, considerably longer than broad, wherein a vessel being inclosed, the water is let out at the first gate, by which the vessel is raised fifteen or sixteen feet, and passed out of this canal into another much higher. By such means a boat is conveyed out of the Loire into the Seine, though the ground between them rise above one hundred and fifty feet higher than either of those rivers.

SMALLAGE, in botany, a species of apium. Smallage has the leaves of the stalks wedge-like, and is called by authors apium palustre, peludapium, and eleoselinum. It is aperient and discutient, and its root is one of the five great openers. It is very good in gross constitutions, and infarctions of the lungs, especially if eat with oil and mustard. There needs no trouble to reduce it into any medicinal form, since it may be eaten so conveniently and agreeably in fallads.

SMALT, a kind of mineral matter prepared from cobalt, sometimes in form of a blue powder, and sometimes in cakes.

SMARAGDUS, the emerald in natural history. See *Emerald*.

SMELL, *Odor*, with regard to the organ, is an impression made on the nose, by little particles continually exhaling from odorous bodies: with regard to the object, it is the figure and disposition of odorous effluvia, which sticking on the organ, excite the sense of smelling: and with regard to the soul, it is the perception of the impression of the object on the organ, or the affection in the soul resulting therefrom. The principal organs of smelling are the nostrils, and the olfactory nerves; the minute ramifications of which latter are described throughout the whole concave of the former.

According to Boerhaave, the act of smelling is performed by means of odorous effluvia floating in the air, being drawn into the nostrils, in inspiration, and struck with such force against the fibrillæ of the olfactory nerves, which the figure of the nose, and the situation of the little bones, render opposite thereto, as to shake them, and give them a vibratory motion; which action, being communicated thence to the common sensory,

senfory, occasions an idea of a sweet, or fetid, or sour, or an aromatic, or a putrid object, &c. The matter in animals, vegetables, fossils, &c. which chiefly affects the sense of smelling, Boerhaave observes, is that subtle substance inherent in the oily parts thereof, called spirit; for that, when this is taken away from the most fragrant bodies, what remains has scarce any smell at all; but this, poured on the most inodorous bodies, gives them a fragrantcy.

Willis observes, that brutes have, generally the sense of smelling in much greater perfection than man; and by this alone, they distinguish virtues and qualities of bodies unknown before; hunt out their food at a great distance as hounds, and birds of prey; or hid among other matters, as ducks, &c. Man having other means of judging of his food, &c. did not need so much sagacity in his nose; yet have we instances of a great deal, even in man. In the *Histoire des Antilles*, we are assured there are negroes who, by the smelling alone, can distinguish between the footsteps of a Frenchman and a negro.

The chemists teach, that sulphur is the principle of all smells, and that those are more or less strong, as the sulphur in the odorous body is more or less dried or exalted. Sulphur, they say, is the foundation of odours, as salt is of savours, and mercury of colours. Smell, like taste, consists altogether in the arrangement, composition, and figure of the parts, as appears from the following experiments of Mr. Boyle. 1. From a mixture of two bodies, each of which is of itself void of smell, a very urinous smell may be drawn, that is, by grinding of quick-lime with sal ammoniac. 2. By the admixture of common water, which, of itself, is void of all smell, or inodorous, another inodorous body may be made to emit a very rank smell. Thus camphire dissolved in oil of vitriol, is inodorous, yet, mixed with water, immediately exhales a very strong smell. 3. Compound bodies may emit smells which have no similitude to the smell of the simples they consist of. Thus oil of turpentine, mixed with a double quantity of oil of vitriol, and distilled; after distillation, there is no smell but of sulphur, and what is left behind, the retort being again urged by a more violent fire, yields a smell like oil of wax. 4. Several smells are only to be drawn forth by motion and agitation. Thus glass, stones,

&c. which even when heated yield no smell, yet, when rubbed and agitated in a peculiar manner, emit a strong smell; particularly beech-wood, in turning, yields a kind of rosy smell. 5. A body that has a strong smell, by being mixed with an inodorous one, may cease to have any smell at all. Thus, if aqua fortis, not well dephlegmated, be poured on salt of tartar, till it ceases to ferment, the liquor when evaporated will yield inodorous crystals, much resembling salt of nitre; yet when burnt, will yield a most noisome smell. 6. From a mixture of two bodies, one whereof smells extremely ill, and the other not well, a very pleasant aromatic odour may be gained, viz. by a mixture of aqua-fortis, or spirit of nitre, with an inflammable spirit of wine. 7. Spirits of wine, by mixing with an almost inodorous body, may gain a very pleasant aromatic smell. Thus inflammable spirits of wine, and oil of Dantzic vitriol, mixed in equal portions, then digested, and at last distilled, yield a spirit of a very fragrant smell. 8. A most fragrant body may degenerate into a fetid one, without the admixture of any other body. Thus, if the spirit mentioned in the former experiment be kept in a well-closed receiver, it will soon turn to the rankness of garlic. 9. From two bodies, one whereof is inodorous and the other fetid, a very pleasant smell may arise, much resembling musk, &c. by putting pearls into spirit of vitriol; for, when dissolved, they yield a very agreeable smell.

SMELT, in ichthyology, the osmerus with seventeen rays in the pinna ani. This is a beautiful little fish; its length is five or six inches, and its breadth not great in proportion, but the thickness is considerable: the head is of an oblong figure, and somewhat acute; the opening of the mouth is large, the back is convex, and the belly somewhat flat; the lower jaw is a little longer than the upper; the nostrils stand in the middle between the eyes and the extremity of the rostrum; they have each two apertures; the eyes are large and round, the pupil is black, and the iris of a silvery white, but tinged a little with blue towards the upper part. These fish will live almost any where, but they are very apt to degenerate.

SMELTING, in metallurgy, the fusion or melting of the ores of metals, in order to separate the metalline part from the earthy, stony, and other parts.

SMELTING-HOUSE, a house where-

in they run and smelt the ore into lead: one of these will run a ton in ten or twelve hours; a fodder is their usual day's work, that is, twenty-two hundred and a half weight.

SMITHERY, or **SMITHING**, a manual art, by which an irregular lump of iron is wrought into an intended shape.

SMOKE, or **SMOAK**, a humid matter, exhaled in form of vapour, by the action of heat, either internal or external. Smoke, Sir Isaac Newton observes, ascends in the chimney by the impulse of the air it floats in; for that air being ramified by the fire underneath, has its specific gravity diminished; thus, being determined to ascend itself it carries up the smoke along with it. The tail of a comet that great author takes to ascend from the nucleus after the same manner.

SMOKE-JACK, a very simple and commodious machine, in a kitchen; so called from its being moved by means of the smoke, or rarified air moving up the chimney, and striking against the tail of the horizontal wheel.

SMUGGLERS, in law, those who conceal or run prohibited goods, or goods that have not paid his majesty's customs.

SMUT, in husbandry, a disease in corn, in which the grains, instead of being filled with flour, are full of a black stinking powder.

* **SMYRNA**, a large and rich sea-port town of Turkey in Asia, and in Natolia. The goodness of the harbour has caused it to be rebuilt several times, after it had been destroyed by earthquakes. It is the rendezvous of merchants from almost all parts of the world, and the magazine of their merchandizes. The Turks have here nineteen mosques, the Greeks two churches, the Jews eight synagogues, the Armenians one church, and the Latins three convents. There are three bishops, one Greek, the other Latin, and the third Armenian. The streets are more open, better paved, and the houses better built, than in most other towns. The caravans of Persia, often bring 2000 bales of silk in a year, besides drugs and cloths. The other commodities brought here are thread made of goats hair, cotton-yarn, cotton in bags, nutgalls, wax, scammony, rhubarb, opium, aloes, tutty, galbanum, gum-arabic, gum-tragacanth, gum-ammoniac, frankincense, zedoary, and all sorts of carpets. All the trade passes through the hands of the Jews. The English and Dutch factors have pro-

testant chapels. The fortifications consist in a fort, a castle, and an old citadel. It is seated at the bottom of a large bay, one hundred and eighty-three miles west-by-south of Constantinople. Long. 27. 25. E. Lat. 38. 28. N.

SNAFFLE, in the manege, is a very slender bit-mouth, without any branches, much used in England; the true bridles being reserved for the service of war.

The snaffle, or small watering-bit, is commonly a scratch mouth, with two very little straight branches, and a curb, mounted with a head stall, and two long reins.

SNAIL, in natural history, a genus of the gymnarthria, or naked insects, the body of which is of a figure approaching to cylindric, and is perforated at the side: the tentacula, or horns, as they are called, are four in number, and two of them have the appearance of eyes.

There are a great many species of snails, whereof we shall only mention a few. 1. The black naked snail, a considerably large insect, being commonly three inches long, and half an inch broad; its whole body is furrowed and much wrinkled, and is of a deep black, except the belly, which is grey.

2. The naked reddish snail grows only to about two inches in length, and is also covered with numerous slight furrows.

3. The amber-coloured snail, when full grown, is only about an inch and a half long: its colour is a glossy yellow, with a cast of brown in it, and the whole body is variegated with spots of a greyish colour.

4. The oat snail, a name given by Dr. Lister, in the Philosophical Transactions, to a small snail, which he observed under the loose bark of old willows, elms, and other trees, and which is of a very singular structure; the shell resembling an oat corn, whence the name and its volute, or wreaths, running contrary to the direction of them in other snails, that is, east and west, as the philosophers express it, referring it to the motion of the sun; but these shells, to use that language, have the turns west and east, or, more plainly, they have the turns running from the right hand to the left, not from the left to the right, as other snails. *Phil. Transf. Num. 250.*

Snails are great destroyers of fruit in our gardens, especially of the bitter sorts of wall-fruit. Lime and ashes, sprinkled on the ground where they most resort, will drive them away, and destroy the

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young brood of them. It is a common practice to pull off the fruit they have bitten; but this never should be done, for they will eat no other till they have wholly eat up this, if it be left for them. The Romans were fond of snails, and had them fed on purpose for their tables. Their taste is not delicious, but rather disagreeable; but this they disguised by means of good sauces, and had other reasons for the receiving them into the lists of foods. They used them as provocatives or inciters to vengery, and with this intent they eat only the necks, as the part in which the parts of generation of the creature were placed; and they had the greater opinion of the efficacy of these, as the parts of generation were double in each individual, that is, the male and female parts both situated in the neck of every snail.

SNAKE, *Anguis*, in natural history, the name of a well known reptile, of the serpent kind. The common snake is a harmless and inoffensive animal, and might even be kept tame in houses, to destroy vermin. Its flesh is restorative, like that of the viper. See *Viper*.

SNAKE with two Heads, a kind of snake in Brasil, having a swelling at his tail, which, at a distance, has the appearance of a head. The Portuguese call it snake with two heads; their fear of this creature, for the bite of which they pretend there is no remedy, having prevented their examining into the truth. They also pretend that it is dangerous to meddle with these snakes after they are dead, and that barely touching them will give the itch. Mr. Couplet was, notwithstanding, bold enough to slay several of them, but found himself, after having performed this operation on two or three, all covered with pustules filled with a reddish water. These remained on him a considerable time, and he was not quite well in three months. The country of Brasil abounds with large snakes, the bite of which is venomous, but the natives and blacks make no scruple of eating them.

SNAPDRAGON, in botany, a genus of plants, the flower of which consists of one leaf of a tubular form, perforated, and having two lips, the upper of which is bifid, and the lower trifid. The pistil arises from the cup, and is fixed, in the manner of a nail, in the hinder part of the flower; and afterwards becomes a seed-vessel, of the shape of the head of a hog, divided into two cells, and usually filled with small seeds fixed to a placenta.

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Many of the species of this plant are very beautiful, and much esteemed in gardens, and are all easily propagated from seeds, which must be sown in a dry soil, not too rich, in April or May. In July the plants may be planted out into large borders, where they will flower the spring following; or they may be sown early in the spring, and they will then flower in the next autumn; but then they are not so likely to stand the winter, and, if the autumn proves not kindly, they will hardly produce a perfect thin seed. They all grow very well on old walls, where they have happened to sow themselves.

SNEEZING, *Sternutatio*, a convulsive motion of the muscles of the breast, used in expiration: wherein, after suspending the inspiration begun, the air is repelled from the mouth and nose, with a momentary violence and noise. The cause is an irritation of the upper membrane of the nose, which communicates with the intercostal nerve by means of the twigs that it detaches to it. This irritation is performed either externally, by strong smells, as marjoram, roses, &c. or by sharp, pungent medicines, as cresses and other sternutatories, which vellicate the membrane of the nose; or internally, by the acrimony of the lymph or mucus, which naturally moistens that membrane.

SNOW, *Nix*, a meteor formed, in the middle region of the air, of vapours raised by the action of the sun, or subterraneous fire; there congealed, its parts condensed, its specific gravity increased, and thus returned to the earth in little white villi, or flakes. The snow we receive, may properly enough be ascribed to the coldness of the atmosphere through which it falls. When the atmosphere is warm enough to dissolve the snow before it arrives at us, we call it rain; if it preserve itself undissolved, it makes what we call snow.

The uses of snow must be very great, if all be true Bartholin has said in its behalf, in an express treatise, *De Nivis Usu Medico*; he there shews, that it fructifies the earth, which indeed, is a very old and general opinion, preserves from the plague, cures fevers, cholics, tooth-achs, sore eyes, and pleurifies, for which last use, his countrymen of Denmark use to keep snow-water gathered in March. He adds, that it contributes to the prolongation of life; giving instances of people in the Alpine mountains that live to great ages: and to the preserving dead bodies,

bodies, instances whereof he gives in persons buried under the snow in passing the Alps, which are found uncorrupted in the summer, when the snow is melted. He observes, that in Norway, snow water is not only their sole drink in the winter, but snow even serves for food; people having been known to live several days, without any other sustenance. Indeed the generality of these medicinal effects of snow are not to be ascribed to any specific virtue in snow, but to other causes. It fructifies the ground, for instance, by guarding the corn or other vegetables from the intenser cold of the air, especially the cold piercing winds. And it preserves dead bodies, by constringing and binding up the parts, and thus preventing all such fermentations or internal conflicts of their particles, as would produce putrefaction. Snow may be preserved by ramming it down in a dry place, under-ground, and covering it with chaff, in the manner of ice.

SNUFF, a powder chiefly made of tobacco, the use of which is too well known to need any description here. See *Tobacco*.

SOAP, or **SOPE**, in commerce, and the manufactures, a kind of paste, sometimes hard and dry, and sometimes soft and liquid, and much used in washing, whitening linens, and by dyers, fullers, &c. The principal sopes of our manufacture are the soft, the hard, and the bole sope; all which consist of an intimate union of the salt of pot-ash with oil, or animal fat. The fine hard white sopes are made with oil-olive and an alcali acuated with quick-lime, which promotes the action of the salt upon the oil, and at the same time disposes the sope to a hard and dry consistence, which it does not easily assume when made with plain alcali. I have tried to prepare sope with alkaline ley alone, and with lime water alone: with the first, the sope turned out softish and unctuous: with the latter, I obtained, not a true sope, but a hard brittle compound, from which the oil separated on trying to dissolve it in water. A quantity of common salt is generally added in the process, but it does not enter the composition of the sope: the use of this salt is, when the oil has been incorporated, by boiling, with the alkaline salt of the ley, to promote the separation of the saponaceous concrete from the water: it is only at this period that the sea-salt is added. The sea-salt may be recovered from the remaining liquor by crystallization; if any part of it happens

from unskillful management, to be retained in the sope, it separates in little crystals as the sope dries. The greatest quantities of sope are made in Spain, Portugal, France, and Italy; oil-olive being in those countries most plentiful. The most common and cheapest of the foreign sopes, is that of Venice. I have seen the preparation of this sort: it is made from three parts of good oil-olive, and two of a caustic ley; which ley is drawn from two parts of Spanish soda and one of quick-lime, with a suitable quantity of water. No metalline vessels are made use of: the boilers are composed of building stone, joined by a particular cement, and secured with iron cramps: in these the oil and ley, to the quantity of some hundred weights at a time, are kept gently simmering for several days and nights. The Venetians prepare also a green sope, from old oil, the mother ley of the white sope, and other refuse matters, adding a certain portion of the juice of beet leaves, which communicates the green colour: the juice is pressed out by a horte-mil consisting of an horizontal stone, with a perpendicular one turning upon it, as in the gun-powder-mills. The common coarse sopes are made with tallow: and the soft, blackish, and greenish sorts with train oil.

Fixed alcalies unite much more difficultly with essential oils than with the expressed. For making a sope with oil of turpentine, formerly celebrated as a medicine under the names of *Sope of Tartar*, the *Universal Corrector*, &c. different processes have been pursued, and all of them tedious or defective. Some mix the oil of turpentine with a well calcined salt of tartar, and stir them together every day for half a year or longer, till the union is completed: some dry the mixture occasionally, as often as it is found to have imbibed moisture from the air. Some have secured the mixture in a strong glass fixed to the clapper of a mill or the sail of a wind-mill, that by this means it might be kept in constant agitation: but simple agitation is not sufficient. Some boil the oil with a caustic ley, keeping the whole continually stirring, nearly in the same manner as for making sope with expressed oils. Others pulverize the salt, strongly heated, in a mortar, and pour upon it whilst very hot, the oil of turpentine likewise heated: by this method a sope is most expeditiously obtained, but the more subtile parts of the oil are dissipated. The best

way is to mix the oil and salt together moderately hot, and digest them in a low glass body for a day, then grind and digest them again. It is not of much importance to be curious about the proportions: if the salt predominates, the oil will the more readily and more perfectly unite with it, and when the union is obtained, the superfluous salt may be separated by deliquation: the process may be finished by drawing over several times from the sops some rectified spirit of wine, by which, if there is any redundant oil, it will be in good measure separated. The other essential oils are still more difficultly combinable with alkalies than that of turpentine: but empyrenumatic oils unite more easily. Volatile alcalis do not form a soap with any kind of oil: they only thicken expressed oil into the consistence of a liniment; and it is only the spirit of sal ammoniac made with quick-lime that does this.

Common hard soap dissolves in water, though not perfectly, by virtue of its alkaline salt. But it dissolves also, and that in a more perfect manner, in rectified spirit of wine, though this menstruum has no action either on the oil or the salt by themselves: it is observable, that a small proportion of soap gives a quite thick consistence to a very considerable quantity of the spirit. On adding any acid to a solution of soap, its ingredients separate from one another, the alkali being absorbed by the acid, and letting go the oil. Soap is used medicinally as a detergent and deobstruent: it dissolves tenacious mucus, and promotes the natural excretions. If there are any medicines capable of dissolving the calculus in the bladder, soap is one of the principal. *Neumann's Chemistry.*

SOAP-EARTH, *Stœtius*, a smooth unctuous kind of earth found in the Levant, and used as a soap.

SOAR-HAWK, an appellation given to an hawk, from the time of taking her from the eyrie, till she has mewed, or cast her feathers.

SOCIETY, in general, denotes a number of persons united together for their mutual assistance, security, interest, or entertainment. The social principle in man is of such an expansive nature, that it cannot be confined within the circuit of a family, of friends, or a neighbourhood: it spreads into wider systems, and draws men into larger communities and common-wealths; since it is in these

only, that the more sublime powers of our nature attain the highest improvement and perfection of which they are capable. In society, the mutual aids which men give and receive, shorten the labours of each; and the combined strength and reason of individuals give security and protection to the whole body. There is a variety of genius among mankind; some being formed to lead and direct others, to contrive plans of employment for individuals, and of government for communities, to invent laws and arts, and superintended their execution, and in short to refine and civilize human life: others again, who have not such excellent heads, may have honest hearts, a true public spirit, love of liberty, order, &c. and finally, others seem best disposed for manual exercises, as bodily labour. Society finds a proper employment for every genius, and the noblest objects and exercises for the noblest geniuses. In society, a man not only finds more leisure, but better opportunities of applying his talents with success. From this short detail it appears, that man was formed for society; which rests on these two principal pillars. 1. That it affords security against those evils which are unavoidable in solitude. 2. That it enables us to obtain those goods, some of which cannot be obtained at all, and others not so well, in a state of solitude, wherein men depend wholly on their own sagacity and industry.

Royal Society of England, an academy or body of persons of eminent learning, instituted by king Charles II. for the promoting natural knowledge. This illustrious body had its original in an assembly of ingenious men, who before the Restoration met weekly in Wadham college, at the lodgings of Dr. Wilkins. Afterwards, from about the year 1658, many of them living in London, held meetings at Gresham college, till they were at length taken notice of by the king, who was pleased to grant them an ample charter, dated April 22, 1663; whereby they were erected into a corporation, consisting of a president, council and fellows, for promoting the knowledge of natural things and useful experiments. Their manner of electing fellows is by balloting. Their council are in number twenty-one, eleven of which are continued for the next year, and ten more added to them, all chosen on St. Andrew's day. Each member at his admission

mission subscribes an engagement that he will endeavour to promote the good of the society; from which he may be freed at any time, by signifying to the president, that he desires to withdraw. The charges are forty shillings paid to the treasurer at admission, and thirteen shillings per quarter, so long as he continues a member.

Their design is to make faithful records of all the works of nature or art which come within their reach; so that the present, as well as after-ages, may be enabled to put a mark on errors which have been strengthened by long prescription, to restore truths that may have been neglected, to push those already known to more various uses, to make the way more passable to what remains unrevealed, &c. To this purpose they have made a great many experiments and observations on most of the works of nature, eclipses, comets, meteors, mines, plants, earthquakes, inundations, springs, damps, subterraneous fires, tides, currents, the magnet, &c. Also, numbers of short histories of nature, arts, manufactures, useful engines, contrivances, &c. The services they have been of to the public are very great. They have improved naval, civil, and military architecture; advanced the security and perfection of navigation; improved agriculture; and put not only this kingdom, but also Ireland, the plantations, &c. upon planting. They have registered experiments, histories, relations, observations, &c. and reduced them into one common stock, and have from time to time published some of the most immediate use under the title of Philosophical Transactions, &c. and laid the rest up in public registers to be transmitted to posterity as a solid ground work for future systems. They have a library adapted to their institution, towards which the late Marshal contributed the Norfolkian library, and a museum, or repository of natural and artificial rarities, given them by Daniel Colwal, Esq; and since enriched by many others. Their motto is *Nullius in Verba*.

SOCIETY for propagating the Gospel in foreign Parts, was instituted by king William, in 1701, for securing a maintenance for an orthodox clergy, and making other provisions for the propagation of the Gospel in the plantations, colonies, frontiers, &c. To that end he incorporated the archbishops, several bishops, and other nobility, gentry, and clergy, to the number of ninety, with privilege to purchase two thousand pounds per year, inheri-

tance and estates for lives, or years, with other goods to any value. They meet yearly on the third Friday in February, to chuse a president, vice-president, and other officers; and the third Friday in every month to transact business, depute fit persons to take subscriptions for the said uses, and of all monies so received to give account to the lord chancellor, &c. They have a standing committee at the chapter-house, to prepare matters for the monthly meeting, which is held at St. Martin's library.

SOCIETY for propagating Christian Knowledge. This was begun in 1699, by some persons of worth, &c. Its original design was to propagate religion in the plantations, to secure the pious education of the poor at home, and to reclaim those that err in the fundamentals of Christianity. In the year 1701, they had procured considerable charities, and transmitted the same to the plantations, in libraries, bibles, catechisms, &c. with a voluntary maintenance for several ministers to be employed in the plantations; but the Society for propagating the Gospel in Foreign Parts being then instituted, they were incorporated by charter in the same, and thus discharged as a particular Society from the further pursuit of that branch of their original design; whereupon they wholly turned themselves to the other, and are now very considerable by great accessions from the clergy and laity.

They meet weekly to concert measures for raising charity for educating poor children, and setting up schools for that purpose, as also for the more regular disposal of books for the instruction of the ignorant, erroneous, &c.

SOCIETY of Antiquarians, was incorporated November 2, 1751.

SOCIETY for Arts, Manufactures and Commerce, instituted in 1753.

MARINE SOCIETY was established in 1764.

SOCIETY of Artists was incorporated, Feb. 26, 1764.

SOCINIANS, in church history, a sect of Christian heretics, so called from their founder Faustus Socinus, a native of Sienna in Italy. This heresiarch, from his youth, gave proofs of a fine and extensive genius: but the misfortune he had of imbibing very early the doctrines of Michael Servetus gave a wrong bias to his judgment. Being afraid lest his opinions should expose him to the severities of the inquisition, he left Italy, and retired into France. About the year 1574, he began openly

openly to declare against the Catholic faith. At first he joined himself with Biandratus in Transylvania; and they both endeavoured to establish, in that country, the doctrines of Servetus against the mystery of the Holy Trinity, and all the other errors of that sectarist. The applauses Socinus received from all the heretics who at that time invested Transylvania, flattered his vanity, and inspired him with a design of establishing a religion entirely new. He began with publishing, that Luther, Calvin, and other reformers had indeed purged religion from many superstitions, which had been introduced into it, but that they had not entirely purified it. Afterwards he openly declared against the doctrine of the Trinity, and taught,

1. That the Eternal Father was the only God; that the word was no more than an expression of the godhead; and had not existed from all eternity: and that Jesus Christ was God no otherwise than by his superiority above all creatures, who were put in subjection to him by the Father.
2. That Jesus Christ was not a mediator between God and men, but sent into the world to serve as a pattern of their conduct; and that he ascended up to heaven only, as it were, to take a journey thither.
3. That the punishment of hell will last but for a certain time, after which both body and soul will be destroyed.
- And, 4. That it is not lawful for princes to make war. These four tenets were what Socinus defended with the greatest zeal: in other matters, he was a Lutheran or a Calvinist. The truth is he did but refine upon the errors of all the Anti-trinitarians who had gone before him.

The Socinians spread extremely in Poland, Lithuania, and Transylvania. Their chief school was at Racow, and there all their first books were published.

They were exterminated out of Poland in 1655, since which time they have been chiefly sheltered in Holland: where, though their public meetings have been prohibited, they find means to conceal themselves under the names of Arminians and Anabaptists.

SOCLE, or **ZOCLE**, in architecture, a flat square member under the bases of pedestals of statues, vases, &c. which serves as a foot or stand. Continued socle is a kind of continued stand or pedestal without either base or cornice, ranging round the whole building, called by Vitruvius *stercobata*.

SOCRATIC PHILOSOPHY, the doctrines and opinions, with regard to morality and religion, maintained and taught by Socrates. By the character of Socrates, left us by the ancients, particularly by his scholar Plato, Laertius, &c. he appears to have been one of the best and wisest persons in all the heathen world. To him is ascribed the first introducing of moral philosophy, which is what is meant by that usual saying, "That Socrates first called philosophy down from heaven to earth;" that is, from the contemplation of the heavens and heavenly bodies, he led men to consider themselves, their own passions, opinions, faculties, duties, actions, &c.

SODA, or **HEAT of the Stomach**, in medicine, the name of a dis temper consisting in a heat or troublesome burning about the pit of the stomach, or its left mouth, which sometimes is extended the whole length of the oesophagus, with a pressure or spasmodic constriction, usually attacking the patient by fits. The cause is generally fat aliment, especially veal, if cold drink be taken soon after. In some it proceeds from acids, in others from aromatics, spirituous liquors, or bilious humours. This disorder is generally slight, and vanishes of its own accord, though in others it is of long duration. In the cure, the cause must always be attended to; if from acids, absorbents are proper, particularly crabs-eyes and prepared shells, mixed with a fourth or fifth part of powder of nutmeg given to half a dram, as also the *tabellæ cardialgicæ*. It is common to take chalk alone or mixed with nutmeg; but care should be taken not to be too free in its use. Oil of tartar per deliquium, given from twenty to thirty drops in coffee, tea, broth, or warm beer, is generally efficacious, as also tincture of tartar and spirit of hartshorn. If it proceeds from bilious humours, thirty or fifty drops of dulcified spirit of nire in water, tea, or coffee, will take away the pain. When it is caused by fat things and draughts of cold liquor, a dram of brandy is good. Now and then laxatives should be given to carry off the humours. In sanguine constitutions, bleeding may be proper.

SOFA, in the Turkish customs, a kind of alcove raised half a foot above the floor of a chamber or other apartment, and esteemed the place of state where visitors of distinction are received.

SOFFITA, or **SOFFIT**, in architecture, any timber ceiling, formed of cross beams of

of flying corniches, the square compartments or pannels of which are enriched with sculpture, painting, or gilding; such are those in the palaces of Italy, and in the apartments of Luxembourg at Paris. This word is particularly used for the under side or face of an architrave, and for that of the corona or larmier, which the ancients called lacunar, the French plafond, and we usually the drip. It is enriched with compartments of roses, and has eighteen drops in the Doric order disposed in three ranks, six in each, placed to the right-hand of the guttæ, and at the bottom of the triglyphs.

SOFTENING, in painting, the mixing and diluting of colours with the brush or pencil. To soften designs in black and white made with the pen, &c. signifies to weaken the tint. To soften a portrait, is to change some of the strokes, and give a greater degree of sweetness and softness to the air thereof, which before had something rough and harsh in it.

SOIL, in agriculture and gardening, earth or ground considered with regard to the quality of its mould for the product and growth of vegetables.

SÖIT *Fait Il est Desiré, Et it done as it is desired*, a form used when the king gives the royal assent to a private bill preferred in parliament.

SOL, or **SOV**, a French coin made up of copper mixed with a little silver. See *Exchange*.

SOL, the sun, in astronomy, astrology, &c. See *Sun*.

SOL, in chemistry, gold, thus called from an opinion that this metal is in a particular manner under the influence of the sun. See *Gold*.

SOL, in heraldry, denotes or, the golden colour in the arms of sovereign princes.

SOLÆUS, or **SOLARIS**, in anatomy, one of the extensor muscles of the foot, rising from the upper and hinder part of the tibia and fibula. This is a large and fat muscle, thicker at the middle than at the edges, and is nearly of an oval figure.

SOLANUM, **NIGHT-SHADE**, in botany, a genus of plants, the corolla whereof consists of a single rotated petal; the fruit is a round smooth berry, punctated at the top, and formed into two cells; the receptacle is fleshy and convex on both sides and the seeds are numerous and roundish. This genus comprehends the solanum, melongena, and lycopersicon of authors; or the common night-shade, the woody night-shade, the love-apple, and the mad-apple, &c.

Common night-shade is used to allay inflammations, to soften and relax the fibres which undergo too violent a tension; they apply the bruised herb to the piles, or bathe the part with the juice a little warmed: this juice is said to be proper in wounds where the blood is extravasated and grumous: it is also sudorific and diuretic, expelling gravel from the kidneys.

SOLAR, something belonging to the sun: thus the solar system is that system of the world wherein the heavenly bodies are made to revolve round the sun as the center of their motion. Also the solar year is that consisting of three hundred and sixty-five days, five hours, and forty-nine minutes, in opposition to the lunar year, consisting of three hundred and fifty-four days. See *Month*, *Cycle*, *Eclipse*, &c.

SOLDER, **SODDER**, or **SODER**, a metallic or mineral composition used in folding or joining together other metals. The word is formed from the French, *soudare*, and from the Latin *solidare*, to strengthen. Solders are made of gold, silver, copper, tin, bismuth, and lead; usually observing, that in the composition there be some of the metal that is to be foldered mixed with some higher and finer metal. Goldsmiths usually make four kinds of solder, viz. solder of eight, where to seven parts of silver, there is one of brass or copper; solder of six, where only a sixth part is copper; solder of four, and solder of three. It is the mixture of copper in the solder that makes raised plate come always cheaper than flat. The solder used by plumbers is made of two pounds of lead to one of block-tin. Its goodness is tried by melting it and pouring a small quantity upon a stone; for if good, there will arise little bright shining stars therein. The solder for copper is made like that of the plumbers, only with copper and tin; for very nice works, instead of tin they sometimes use a quantity of silver. Solder for tin is made of two thirds of tin and one of lead; but where the work is any thing delicate, as in organ pipes, where the juncture is scarce discernable, it is made of one part bismuth and three parts of pewter.

SOLDERING, among mechanics, the joining and fastening together two pieces of the same metal, or of two different metals, by the fusion and application of some metallic composition on the extremities of the metals to be joined. See the last article.

To solder upon silver, brass or iron :
take

Take silver, five penny-weight; brass, four penny-weight; melt them together for soft solder, which runs soonest. Take silver, five penny-weight; copper, three penny-weight; melt them together for hard solder. Beat the solder thin, and lay it on the place to be soldered, which must be first firmed and bound together with wire, as occasion requires; then take borax in powder, and temper it like pap, and lay it upon the solder, letting it dry; then cover it with quick coals, and blow, and it will run immediately; take it presently out of the fire, and it is done. It is to be observed, that if any thing is to be soldered in two places, which cannot well be done at one time, you must first solder with the harder solder, and then with the soft; for if it be first done with the soft, it will unfold again before the other is soldered. Let it be observed, that if you would not have your solder run about the piece that is to be soldered, you must rub such places over with chalk.

In the soldering either of gold, silver, copper, and all the metals before-mentioned, there is generally used borax in powder, and sometimes rosin. As to iron, it is sufficient that it be heated red-hot, and the two extremities thus hammered together, by which means they will become incorporated into one another.

SOLDIER, a military man listed to serve a prince or state, in consideration of a certain daily pay. The soldiers are properly the land forces of a kingdom or state; but in England it is against the antient law to keep an army of soldiers in time of peace. Where any soldier that is lawfully retained shall depart from his colours without licence, he is declared to be guilty of felony by 18 Hen. VI. c. 9. and every soldier who either causes a mutiny or deserts the service, shall be punished with death or otherwise, as a court martial shall think fit. Also persons suspected of desertion, are to be apprehended by constables, who shall be allowed a reward of 20 s. for every such deserter. By the 4 Geo. I. c. 4. it is ordained, that no soldier shall be taken out of the service by any process at law, unless it be for some criminal matter, or where the debt he owes amounts to 10 l. at the least, of which affidavit is to be made, &c. Soldiers must be quartered in inns and alehouses only, and not in private houses, without the consent of the owners, under certain penalties: and where victuallers refuse soldiers quartered

on them, or constables receive any reward for excusing their neglect, they forfeit a sum not above 5 l. nor under 30 s. by 3 Geo. II. c. 2. A person enlisted for a soldier, within four days after, is to be carried before the next justice or chief magistrate of a town, and is to declare his assent that he listed voluntarily, &c. but if he then dissents thereto, on his returning the money received, and paying 20 s. he may be discharged. In case any subject of Great Britain or Ireland shall list or enter himself, or procure any one to be enlisted a soldier to go beyond the seas, without leave obtained from his majesty, such person shall be punished as a felon by 8 and 9 Geo. II. There are acts annually made for punishing mutiny, &c. of soldiers, and false musters, and for the better payment of the army and their quarters, &c.

SOLE, in the manege, a nail or sort of horn under a horse's foot, which is much more tender than the other horn that encompassed the foot, and by reason of its hardness is properly called the horn or hoof. A horse's shoe ought to be so set upon the hoof as not to bear upon the sole, for otherwise the sole would be hurt, and not only make the horse lame, but corrupt the flesh that separates it from the coffin-bone. To take out the sole, is to do it without touching the horn or the hoof; or if you take off the horn; you make a hoof-cast.

SOLECISM, in grammar, a false manner of speaking, contrary to the use of language and the rules of grammar, either in respect of declension, conjugation, or syntax.

SOLEMN, something performed with much pomp, ceremony, and expence: thus we say, solemn feasts, solemn funerals, solemn dirges, solemn games, &c.

SOLFAING, in music, the naming and pronouncing of the several notes of a song, by the syllables sol, fa, la, &c. in learning to sing it.

SOLID, in philosophy, a body whose minute parts are connected together, so as not to give way, or slip from each other upon the smallest impression.

In geometry, solid is the third species of magnitude, having three dimensions, viz. length, breadth, and depth.

A solid may be conceived to be formed by the revolution, or direct motion, of a superficies, of any figure whatever, and is always terminated or contained under one or more planes or surfaces, as a surface is under one or more lines.

Solids.

Solids are commonly divided into regular and irregular. The regular solids are those terminated by regular and equal planes; and are only five in number, viz. the tetrahedon, which consists of four equal triangles; the cube or hexahedron, of six equal squares; the octahedron, of eight equal triangles; the dodecahedron, of twelve; and the icosaedron, of twenty equal triangles.

The irregular solids are almost infinite, comprehending all such, as do not come under the definition of regular solids; as the sphere, cylinder, cone, parallelogram, prism, parallelopiped, &c.

SOLID ANGLE, that formed by three or more planes meeting in a point, like the point of a diamond well cut.

SOLID BASTION. See **BASTION**.

SOLID NUMBERS, those which arise from the multiplication of a plane number, by any other whatsoever; as 18 is a solid number made of six (which is plane) multiplied by three; or of nine multiplied by 2;

SOLID PROBLEM, in mathematics, one which cannot be geometrically solved unless by the intersection of a circle and a conic section: or by the intersection of two other conic sections, besides the circle. As to describe an isosceles triangle on a given right line, whose angle at the base shall be triple to that at the vertex. This will help to inscribe a regular heptagon in a given circle; and may be resolved by the intersection of a parabola, and a circle. This problem also helps to inscribe a nonagon in a circle; and may be solved by the intersection of a parabola, and an hyperbola between its asymptotes, viz. To describe an isosceles triangle, whose angle at the base shall be quadruple of that at the vertex. And such a problem as this hath four solutions, and no more; because two conic sections can cut one another but in four points.

SOLIDS, in anatomy, &c. denote the continent parts of the human body; being a congeries of pipes, or vessels, which contain a liquor. The solid parts of the body, though equally composed of vessels, are different with regard to their consistence; some being hard, and others soft. The hard, as the bones and cartilages, give firmness and attitude to the body, and sustain the other parts: the soft parts either alone or together with the hard, serve to execute the animal functions. The solids are commonly divided into similar or simple; and dis-

similar, compounded, or organic. The similar parts are the fibres, membranes, bones, cartilages, ligaments, muscles, tendons, aponeuroses, glands, arteries, veins, nerves, the secretory and excretory canals, and the common integuments. The dissimilar are such as are composed of the former, as the viscera and other parts of the body, viz. the head, neck, thorax, abdomen, and extremities: every one of which is again subdivided into lesser portions.

SOLIDITY, in physics, a property of matter or body, whereby it excludes every other body from that place which itself possesses. Among geometricians, the solidity of a body denotes the quantity or space contained in it, and is called also its solid content.

SOLIDITY, in architecture, is applied both to the consistence of the ground whereon the foundation of a building is laid; and to a mass of masonry of extraordinary thickness, without any cavity therein.

SOLILOQUY, a reason or discourse which a man holds with himself. Papias says, that soliloquy is properly a discourse by way of answer to a question that a man has proposed to himself. Soliloquies are become very common on the modern stage, yet nothing can be more inartificial or more unnatural than an actor's making long speeches to himself to convey his intentions, &c. to the audience.

SOLITARY, something retired, or in private, remote from the company or commerce of others of the same species.

SOLITARIES, a denomination of nuns of St. Peter of Alcantara, instituted in the year 1676, the design of which is to imitate the severe penitent life of that saint: thus they are to keep a continual silence, never to open their mouths to any body but themselves; employ their time wholly in spiritual exercises, and leave the temporal concerns to a number of maids, who have a particular superior in a separate part of the monastery; they always go bare-footed without sandals; gird themselves with a thick cord, and wear no linen.

SOLSTICE, in astronomy, that time when the sun is in one of the solstitial points; that is, when he is at his greatest distance from the equator, thus called, because he then appears to stand still, and not to change his distance from the equator for some time; an appearance owing to the obliquity of our sphere,

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and which those living under the equator are strangers to. The solstices are two in each year, the æstival or summer solstice, and the hyemal or winter solstice: the summer solstice is when the sun seems to describe the tropic of Cancer, which is on the 22^d of June, when he makes the longest day: the winter solstice is when the sun enters the first degree, or seems to describe the tropic of Capricorn, which is on the 22^d of December, when he makes the shortest day. This is to be understood as in our northern hemisphere; for in the southern, the sun's entrance into Capricorn makes the summer solstice, and that into Cancer the winter solstice. The two points of the ecliptic, wherein the sun's greatest ascent above the equator, and his descent below it, are terminated, are called the solstitial points: and a circle supposed to pass through the poles of the world and these points, is called the solstitial colure. The summer solstitial point is in the beginning of the first degree of Cancer, and is called the æstival or summer point; and the winter solstitial point in the beginning of the first degree of Capricorn, and is called the winter point. These two points are diametrically opposite to each other.

SOLVENT, the same with dissolvent. See **DISSOLVENT**.

SOLUTION, in pharmacy, considered as an operation, is the commixing solid bodies with fluids, in such a manner that, commensuating, they shall be thereby also converted to fluidity, and the whole rendered one equable similar fluid.

SOLUTION, in algebra and geometry, the answering a question, or the resolving any problem proposed. See *Algebra* and *Geometry*.

SOLUTION of Continuity, in surgery, the separation of the natural cohesion of the solid parts of the body, by a wound.

SOLUTIVE, an appellation given to laxative and loosening medicines.

* **SOMERSETSHIRE**, one of the counties of England, bounded by the Bristol channel, the river Severn, and Gloucestershire on the north; by Wiltshire on the east; by Dorsetshire on the south; and by Devonshire on the west. It is in length from east to west above sixty miles, and in breadth from north to south about forty. It contains three hundred and eighty-five parishes, thirty-five market-towns, eight of which send members to parliament, and there are two for the county. The soil is fruitful, and in the low country produces plenty

of corn, grass, and apples, of which they make cyder. In general, the country is very uneven, and in some places there are bogs that are impassable in the winter season. In many places there are rich mines, particularly about Mendips, hills and Bradfield-downs. In St. Vincent's rock, near Bristol, there is found a soft sort of crystal, now well known by the name of Bristol stones. The principal rivers are the Severn, the Avon, the Parret, the Frome, and the Ivel; which abound in excellent fish. Among the towns there are three cities, namely, Bristol, Bath, and Wells. In general, this county is noted for its woollen manufactory.

SOMNAMBULI, in medicine, persons who walk in their sleep, otherwise called noctambuli.

* **SOMNUS**, or **SLEEP**, one of the blessings to which the Pagans erected altars, was represented as the son of Erebus and Night, and the brother of Death. Orpheus calls this deity the happy king of gods and men; and Ovid gives a very beautiful description of his abode, and represents him dwelling in a deep cave in the country of the Cimmerians. Into this cavern the sun never shines; and a perpetual stillness reigns, no noise being heard but the soft murmur caused by a branch of the river Lethe, which creeps over the pebbles, and invites to sleep. At its entrance grow poppies and other soporiferous herbs. The drowsy god lies reclined on a bed stuffed with black plumes, the bedstead is of ebony; the covering is also black, and his head surrounded by fantastic visions. The offspring of this god are very numerous, but the principal are Morpheus, Phobitus, and Phantasia.

SON, an appellation given to a male child, considered in the relation he bears to his parents.

SONATA, in music, a piece or composition wholly performed with instruments; and which is, with regard to instruments, what the cantata is with respect to voices.

SONG, in poetry, a little composition consisting of simple, easy, natural verses, set to a tune, in order to be sung.

SONG, in music, is applied, in general, to any single piece of music, whether contrived for a voice or instruments.

SONNA, a book of Mahometan traditions, wherein all the orthodox Mussulmen are required to believe.

SONNET, in poetry, a kind of composition

position properly contained in fourteen verses, viz. two stanzas or measures of four verses each, and two of three; the eight first verses being all in two rhymes. The sonnet is of Italian origin, and Petrarch is allowed to be the father of it. It is held the most difficult and artful of all poetical compositions, as requiring the utmost accuracy and exactness. It is to end with some pretty ingenious thought: the close must be particularly beautiful, or the sonnet is naught.

SOOT, a volatile matter, arising from wood, and other fuel, along with the smoke: or rather it is the smoke itself, fixed and gathered on the sides of the chimney.

Wood-foot is of a shining black colour, a disagreeable smell, and an acrid, bitter, and nauseous taste; its chief use, for medicinal purposes, being in hysterical cases, in which it is sometimes exhibited in conjunction with the fetid gums. The volatile salt and spirit of foot are, when sufficiently purified, not different in quality from those of animal substances, though some prefer them in nervous complaints, and particularly in epileptic cases. The tincture of foot is made thus: take of wood-foot, two ounces; of assaetida one ounce; and proof spirit, two pints: digest and strain. It is good not only in hysterical cases, but also in epilepsies, and other nervous disorders. Soot makes an excellent manure for cold lands that have been over-run with moss; but the foot of sea coals is better for this purpose than that of wood. The dyers also make a considerable use of foot, for a dun colour.

SOPHI, or SOFI, a title given to the emperor of Persia, importing as much as wise, sage, or philosopher. There is no prince in the world whose authority is more absolute than that of the sophi of Persia.

SOPHISM, in logic, &c. an argument which carries much of the appearance of truth, and yet leads into error.

SOPHIST, a person who frames sophisms: that is, uses subtle arguments, with intent to deceive those he would persuade or convince. The word is framed from the Greek, *sophistes*, an impostor, or deceiver.

SOPHISTICATION, the adulterating any thing with what is not good. This practice unhappily obtains too much among chemists, and others, who make up medicines for sale; and, in many cases, the cheat is carried on so artfully,

as to prevent a discovery, even among persons of the most discerning faculties.

SOPORIFICS, medicines which have the faculty of procuring sleep. The word is formed from the Latin, *Sopor*, sleep.

SORITES, in rhetoric, a kind of argument, wherein a number of proportions are gradually and minutely laid together, and something inferred from the whole.

SOVEREIGN, supreme; the chief and highest being, the Almighty, a term, in strictness, only applicable to God.

SOVEREIGN, with regard to subjects, is applied to kings, and princes, who are supreme and independent, and whose authority is bounded only by the laws of God, of nature, and the fundamental laws of the state.

SOUL, *Anima*, a spirit adapted to an organised body. Many of the philosophers allow of two, and some of three kinds of souls, viz. a rational soul, which they hold to be divine, and infused by the breath of God: irrational, or sensitive soul, which man has in common with brutes, and which is formed out of the elements. The philosophers are not agreed as to the manner wherein the soul resides in the body. Some hold it equally diffused throughout every part thereof. Others say it influences and acts on every part of the body, though it has its principal residence in some particular part, called the sensory. This principal part, Des Cartes maintains, is the pineal gland of the brain, where all the nerves terminate, &c.

Borri, a Milanese physician, in a letter to Bartholine, *De Ortu Cerebri & Ufu medico*, asserts, that in the brain is found a certain very subtle fragrant juice, which is the principal seat or residence of the reasonable soul; and adds, that the subtilty and fineness of the soul depends on the temperature of this liquor, rather than on the structure of the brain, to which it is usually ascribed. This liquor, we conceive, must be the same with what is usually called the nervous juice, or animal spirits; the constitution of which is, doubtless, of great importance, with regard to the faculties of the soul.

Mr. Locke distinguishes two principal faculties or powers of the rational or human soul, viz. perception and willing.

To these, other philosophers add others, as sensation, liberty, memory, imagination, and habit.

SOUND, a perception of the soul
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communicated by means of the ear; or the effect of a collision of bodies, and a tremulous motion consequent thereon, communicated thence to the circumambient fluid, and propagated through it to the organ of hearing. We know by the experiment of the bell in the exhausted receiver, that sound has a necessary dependance on the air; and if we reflect on the nature of the particles of a sonorous body, and those of air, we shall find that sound is nothing but the propagation of the tremors, and the vibrations of the former impressed on the latter, to the tympanum or drum of the ear, by the action of whose membrane they are communicated to the internal cavities of the ear, where the auditory nerve receives the impression, and excites the sensation, in the common sensory, in the brain. For the parts of a sonorous body being put in motion by percussion, vibrate forwards and backwards, through very small spaces, by their elastic quality. In this action they affect the particles of air contiguous to them, and compel them, upon the first impulse, to move forwards also; and these propel the next, and so on to a very considerable distance, according to the intensity of the percussive force. By this means, the particles of air are compressed nearer together than in their natural state. But when the particles of the sonorous body make the second part of the vibration, by returning back again, the particles of air, also by their repulsive power, repel each other toward their proper places, and thus again expand themselves. Now, since motion, once generated in elastic bodies, continues some time before it can be destroyed by the resistance and counter-action of contiguous bodies, it follows, that the particles of the sonorous body, and, consequently, those of the adjacent air, have, for some time, a reciprocal vibratory motion, by going forwards and backwards, through very small spaces, in indefinitely small particles of time; which motion gradually decreases till it be totally destroyed.

SOUND, in music, a quality of the several agitations of the air, considered so that their disposition, measure, &c. may produce music or harmony.

SOUND, in geography, a streight, or inlet of the sea, between two head-lands. The famous streight which joins the German ocean to the Baltic, is called, by way of eminence, the Sound.

SOUND-BOARD, the principal part of an organ, and that which makes the

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whole machine play. The sound-board, or summer, is a reservoir into which the wind, drawn in by the bellows, is conducted by a port-vent, and hence distributed into the pipes placed over the holes of the upper part. The wind enters them by valves, which open by pressing upon the stops or keys, after drawing the registers which prevent the air from going into any of the other pipes, but those it is required in.

SOUNDING, in navigation, the act of trying the depth of the water, and the quality of the bottom, by a line and plummet, or other artifice.

SOUR Land, in agriculture, a term used by the farmers to express a cold, and somewhat wet clayey soil.

SOW, in the iron-works, the name of the block, or lump of metal, they work at once in the iron-furnace. The size of these sows of iron is very different, even from the same workmen, and the same furnace. These furnaces having sandstone for their hearths and sides, up to the height of a yard, and the rest being made of brick, the hearth, by the force of the fire, is continually growing wider; so that, if it at first contains as much metal as will make a sow of six or seven hundred weight, at last it will contain as much as will make a sow of two thousand weight.

SOWING. One very great article, in sowing to advantage, is to know exactly at what depth the seed may be planted, without danger of burying it. Seed is said to be buried, when it is laid at a depth below what it is able to come up at. Different sorts of seeds come up at different depths, some six inches, or more, and others will not bear to be buried at more than half an inch. The way to come at an accurate knowledge of the depth at which every seed will come up best from the sowing, is by making gages in the following manner: saw off twelve sticks of about three inches diameter, bore a hole in the end of each stick, and drive into each a taper peg; let the peg in the first stick be half an inch long, the next an inch, and so on, every peg being half an inch longer than the other, till the last is six inches long: then in that sort of ground in which you intend to plant, make a row of twenty holes with the half-inch gage, put therein twenty good seeds, cover them up, and then stick the gage at the end of that row. Proceed in the same manner with the eleven other gages, making the holes in the

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same row all with the same gage, and sticking it at the end of the row: when the seeds begin to appear, it will be easy to see as what depth they come up best, by observing the most flourishing row, and taking up the gage at the end, and seeing what is its length.

* SPA, a town in the bishopric of Liege, in Germany, famous for its mineral waters. Those of the Pouhon spring in Spa are preferred, by our chief physicians, to any others in or near the county of Liege. The contents of this water, by means of which it is able to do such great things in many chronical cases, are understood by the following experiments and observations. First, when the Spa water is carried to any distant place, though ever so well stopped down, they always, after a time, will precipitate a small quantity of a yellow ochreous earth. Secondly, if a single grain of galls be put into an ounce of Spa water, it tinges the whole with a beautiful purple; but if the water be heated before the galls are put in, there will not be the least change of colour produced in it. Thirdly, mixed with milk, they do not coagulate it; but, when mixed with wine, they make a great ebullition, and throw up a large quantity of air-bubbles with a peculiarly pleasing smell. Fourthly, the waters drank at the spring cause a sort of drunkenness, but it does not last above a quarter of an hour. Fifthly, a small phial, being filled up to a certain height with Spa water, and afterwards exactly to the same height with pure distilled water, and weighed, when filled with each, in a nice balance, was found, when the Spa water was in it, to weigh three ounces, four drachms, and forty grains; and with the other, three ounces, four drachms, and forty-one grains: so that the Spa water, notwithstanding its mineral particles, is somewhat lighter than the purest common water. Sixthly, and finally, a pint of the Spa water evaporated over a very gentle fire, leaves behind only a grain and a half of a white powder. Hence it appears, that the Spa waters are the lightest and most subtle of all the mineral waters; and the small quantity of earth, and large portion of subtle mineral spirit they contain, bespeak their possessing the most exalted virtues of all the mineral waters. One very remarkable virtue of this water is, that it greatly relieves in all disorders of the kidneys, ureters, and bladder, whether occasioned by stone, gravel, or ulcerations. It possesses, besides, all the

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virtues of the other mineral waters, and is of the greatest service in edulcorating sharp, and dividing viscous humours, and removing all diseases arising from these causes, by disposing them to pass off by the proper emunctories.

SPACE, is defined by Mr. Locke to be a simple idea which we attain both by our sight and touch, the modes of which are distance, capacity, extension, duration, &c.

Space, considered barely in length; between two bodies, is the same idea which we have of distance. If it be considered in length, breadth, and thickness, it is properly called capacity; when considered between the extremities of matter which fills the capacity of space, and something solid, tangible, and moveable, it is then called extension; so that extension is an idea belonging to a body, but space, it is plain, may be conceived without it. Each different distance is a different modification of space, and each idea of any different space is a simple mode of this idea: such are an inch, foot, yard, &c. which are the ideas of certain stated lengths, which men settle in their minds, for the use, and by the custom of measuring. When these ideas are made familiar to mens thoughts, they can repeat them as often as they will, without joining to them the idea of body, and frame to themselves the ideas of feet, yards, or fathoms, beyond the utmost bounds of all bodies, and by adding these still one to another, enlarge their idea of space as much as they please. From this power of repeating any idea of distance without ever coming to an end, we come by the idea of immensity. Another modification of space is taken from the relation of the termination of the parts of extension, or circumscribed space, amongst themselves; and this is what we call figure. This the touch discovers in sensible bodies, whose extremities come within our reach; and the eye takes both from bodies and colours, whose boundaries are within its view; where observing how the extremities terminate, either in straight lines, which meet at discernible angles; or in crooked ones, wherein no angles can be perceived; by considering these as they relate to one another in all parts of the extremities of any body or space, it has that idea we call figure, which affords to the mind infinite variety. Another mode belonging to this head is, that of place. There is another mode of space, the idea of which we get from the fleeting and perpetually

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petually perishing parts of succession, which we call duration.

SPACE, in geometry, the area of any figure, or that which fills the interval or distance between the line that terminates it.

SPACE, in mechanics, the line a moveable body, considered as a point, is conceived to describe by its motion.

SPADE, an instrument for digging up the ground, the handle or shaft whereof is about three feet long; the head is all of iron; the upper part being flat for the workman to set his foot on, to force it into the ground; the length of the head is about a foot or fifteen inches, and the breadth six or eight.

* SPAIN, a considerable kingdom of Europe; bounded by the sea on the S. and N. on the W. by Portugal and the ocean, and on the N. E. by the Pyrenean mountains, which separate it from France. The air is generally hot, which obliges the inhabitants to lie down after dinner, and sit up late at nights. It rains but very seldom, and sometimes there is no cloud to be seen for months together. There are a great number of mountains, which are distinguished in the maps by the name of Sierra, several of which are very high, and covered with snow; and yet the valleys are seldom rendered very cold thereby. No travellers can ride any great way without passing one of these mountains, and therefore the inhabitants make use of mules, as being surer footed. Some parts will not bear wheat, and in others, the inhabitants are too idle to till the ground; for which reason it is not very plentiful. The wines of Spain are generally very good, but they are mostly drunk in other countries, for the Spaniards are not fond of tipping. The fruits are very fine; they have apples, pears, chestnuts, hazel-nuts, olives, figs, pomegranates, oranges, citrons, lemons, capers, and the like. They have salt enough for their own use, a few sugar-canes, and some saffron. In some of the mountains, are precious stones, marble, allum, sulphur, and other minerals; in Biscay particularly, the iron mines are inexhaustible. There are few wild beasts in the forests, except bears. They have great numbers of sheep, which yield the finest wool in Europe, and greatly valued in other countries. However, the Spaniards have not many woollen manufactures. The Spanish horses are very good, particularly those of Andalusia and Af-

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furias. Also in Andalusia, there is a race of wild bulls, which they make use of in their bull-fights. In Biscay, there are little hogs, which the ladies are so fond of, that they carry them about like lap-dogs. The principal rivers are the Tajo, the Douro, or Duero, the Guadiana, the Guidalquiver, and the Ebro; over which there are 700 bridges. The Spaniards are very moderate in their eating, and can make a meal of olives, a salad, a little garlick, or a few roots. They seldom invite their friends to dinner, and the women in general are very bad cooks. The men dine by themselves, and their wives and children eat together. The general vice of the nation is pride and haughtiness, and the very peasants keep genealogies of their families, like the Welsh; for this reason, they have gravity in their looks, and when they walk. This disposition renders them very indolent. The women are generally very clean, and very amorous; they have black eyes, flat bosoms, little feet, and wear long garments. When they make visits, they sit on carpets, in the manner of taylors, as well as at home; which custom they have derived from the Moors. They are greatly addicted to painting, and are kept very much at home, through the jealousy of their husbands. Neither men nor women often change the fashion of their garments; and the men generally wear their own hair, without powder, and long swords by their sides. With regard to their religion, they are the strictest Papists in the world, and yet for fornication and impurity, they are the worst nation in Europe. Spain is an absolute monarchy, and in Madrid there are several courts of justice, who determine all affairs that come before them; but they have each their distinct provinces; being eight in all. There is also a privy-council, called the Junto, composed of the king's favourites. There are four viceroys in Spain; namely, those of Arragon, Navarre, Valencia, and Catalonia; for the other provinces have only governors. The king has also five viceroys, and 55 governors in America, who are changed every five years. The revenue of the king is almost immense, but there is no knowing exactly what it amounts to. With regard to the church, there are 8 archbishops, and 44 bishops, who have all large revenues, and the king disposes of all ecclesiastical offices. The inquisition was established in 1477, and there

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there are now 14 tribunals, in as many different places. This Inquisition was first designed against the Moors; but is now extended to Jews and Heretics, though it is said there are still many of the former in high offices about the court, notwithstanding all their vigilance. The wild bulls, already mentioned, are a sort of buffaloes, and chiefly made use of at Madrid; though there are bull-fights sometimes at other places. The king, and all the court, are present at these fights, and all the fronts of the houses are adorned with tapettry; likewise the balconies are taken up by the principal ladies in the kingdom, who appear in their richest habits and jewels. Those that enter the lists with the bulls, are called *Torreadores*, and are all knights, armed with nothing but a lance, and cannot make use of their swords, but when they are near the bulls; when one of them falls, the populace run immediately, and cut him in pieces with their swords. Besides the king's territories in Europe, he possesses the best part of America, and is master of many rich islands in the South Seas; and particularly the Philippines, from whence they import the rich merchandizes of the East-Indies. He also possesses several places in Africa, particularly Ceuta and Oran. The present king of Spain is Charles III. who is of the Bourbon family, and was formerly king of the Two Sicilies. The heir to the crown is always called Prince of Asturias.

SPAN, a measure taken from the space between the thumb's end and the tip of the little finger, when both are stretched out. The span is estimated at nine inches.

SPAR, in natural history, a shining stony substance, generally, though improperly, supposed to be compounded of crystal, incorporated with some mineral, earthy, stony, or metallic matter; frequently found in caves and grottos, and in the clefts of rocks, lead mines, &c.

Spar is naturally pellucid, and is found in almost an infinite variety of forms; in some of which it retains its transparency and purity, in others it is more or less debased by an admixture of earth, and grows, accordingly, less and less clear, till, from the marbly hue of some of the moderately debased kinds, it sinks in some to a mere earthy appearance. The genuine and distinguishing characters of spar, in whatever form it occurs, are these; it will not produce fire when struck

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against a steel, it ferments very briskly with aqua fortis, and, when pure, is totally dissolved by it, and is very readily calcined in a small fire. Spars are defined to be fossils not inflammable, nor soluble in water. When pure, pellucid and colourless, and emulating the appearance of crystal, but wanting its distinguishing characters; composed of plane and equable plates, not flexible or elastic; not giving fire with steel, readily calcining in a small fire, and fermenting violently with acids, and wholly soluble in them.

SPARADRAP, in pharmacy, &c. a sort of cerecloth, called also *tela Gualteri*, the form of which is directed as follows: take of the diapalma plaister, and diachylon with the gums, each one pound; ceruss, half a pound; root of orris finely powdered, an ounce and a half. Mix these together, and whilst they are in fusion, dip them in soft worn-out linen rags, so that they may be covered with the plaister on each side; then take them out, spread them, and let them dry; and smooth the surfaces with a knife or spatula. The principal use of these is for issues.

SPARROW, in ornithology, a species of the *fringilla*.

The common sparrow is the brown *fringilla*, with a black throat and brown temples. It is larger than the linnet, and the male is an erect and handsome bird; the head is large, the eyes small, and the beak short; the wings are short and the tail short and forked.

The reed sparrow, or the *fringilla* with a black head, brown at the sides, and with a white ring round the neck, and a mottled black and white breast, is a very beautiful and singular bird, of the size of the common linnet; the head is small and depressed, the beak short and black, and the eyes hazel; and in most other particulars it corresponds with the common sparrow.

SPARROW-HAWK, in ornithology, the yellow-legged falco with a white undulated breast, and a fasciated brown tail.

SPASM, in medicine, a convulsion.

SPASMODIC, something belonging to a spasm or convulsion.

SPATULA, or **SPATHULA**, an instrument used by surgeons and apothecaries. This instrument is made of different shapes, according to the various uses of it.

SPAVIN, in the manege, a disease in horses, being a swelling or stiffness usually in the ham occasioning a lameness. There are two kinds of spavins, viz. the ox-spavin,

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win, which is a callous tumour at the bottom of the ham on the inside, hard as a bone, and very painful; while it is yet recent, some only halt with it at the first coming out of the stable: the other, which is the dry spavin, is more easily perceived by the horse's raising one of his hind legs with a twitch higher than the other; but sometimes it is found on both legs. This kind, which some also call string-halt, frequently degenerates into the ox-spavin, for which there is no remedy but to apply the fire, and even this is not always successful.

There are two other kinds of spavin which have their seat in the hoof, viz. the blood-spavin, being a soft tumour which grows through the horse's hoof, and is usually full of blood; the other is the bone-spavin, being a crusty substance growing on the inside of the hoof under the joint.

SPAYING, or SPADING, the operation of castrating the females of several kinds of animals, as sows, bitches, &c. to prevent any further conception, and promote their fattening.

SPEAKER, *of the House of Commons*, a member of the house elected by a majority of the votes thereof, to act as a chairman or president, in putting questions, reading briefs or bills, keeping order, reprimanding the refractory, adjourning the house, &c. Sir Fletcher Norton is the present Speaker of the House of Commons.

The first thing done by the Commons, at the first meeting of a parliament, is to choose a speaker, who is to be approved of by the king, and who, upon admission, begs his majesty, that the commons, during their sitting, may have free access to his majesty, freedom of speech in their own house, and security from arrests.

The speaker is not allowed to persuade or dissuade, in passing a bill; but only to make a plain and short narrative; nor to vote, unless the house is equally divided. The lord chancellor, or keeper, is usually speaker of the house of lords. The speaker of the convocation is called the prolocutor.

SPEAKING, the art or act of expressing one's thoughts in articulate sounds or words.

SPECIAL, something particular, or that has a peculiar designation, from the Latin, *species*, in opposition to general, of *genus*.

SPECIES, an idea which relates to some other more general one; or is comprised under a more universal division of a genus. The word is Latin, derived

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from the ancient verb *specio* to see. *Species* is a mere term of relation; and the same idea may be a species, when compared to another more general one; and a genus, with regard to a more particular one. Thus body is a genus, with regard to an animate and inanimate body; and a species with regard to substance.

SPECIES, in logic, one of the five words called by Porphyry *universalis*.

SPECIES, in optics, the image painted on the retina, by the rays of light reflected from the several points of the surface of an eye.

SPECIES, in rhetoric, a particular thing, contained under a more universal one.

SPECIES, in commerce, are the several pieces of gold, silver, copper, &c. which having passed their full preparation and coinage, are current in public.

SPECIES, in algebra, the characters or symbols made use of to represent quantities.

SPECIES, in pharmacy, denotes the ingredients of a compound medicine, as the diascordium in a dry form, or only reduced powder.

Change of SPECIES, a term made use of in husbandry to express an expedient the farmer often has recourse to, in order to procure good crops: this is the sowing first one kind of plant, then another, and then a third, and so on, upon the same land: by this means the most is made of the soil; and it is found, when it will no longer give a good crop of the first corn planted on it, it will still give a good one of some other species; and finally, of peace after all. After this last change of species, it is found necessary, in the common method of husbandry, to renew the land with fallowing and manure in order to its producing any thing again.

SPECIFIC, in philosophy, that which is peculiar to any thing, and distinguishes it from all others.

SPECIFIC, in medicine, a remedy, whose virtue and effect is peculiarly adapted to some certain disease, is adequate thereto, and exerts its whole force immediately thereon.

SPECIFIC GRAVITY, that by which one body is heavier than another of the same dimension, and is always as the quantity of matter under that dimension. Thus a cubical inch of iron is heavier than a cubical inch of wood; for the particles which compose the iron being more solid, and more closely compacted together; or, which is the same, having fewer interstices

interstices or vacuities between them, than those of the wood; there is actually more matter contained under the same dimensions in iron than wood; and, therefore, is said to be specifically heavier than wood.

SPECILLUM, or **SPECULUM**, an instrument used by surgeons for searching and dilating wounds.

SPECTACLES, in dioptrics, a machine consisting of two lenses, set in silver, horn, &c. to assist the defects of the organ of sight.

Old people, and others who have flat eyes, use convex spectacles, which cause the rays of light to converge so as to fall upon the retina: whereas myopes, or short-sighted persons, use concave lenses for spectacles, which causing the rays to diverge, prevent their meeting before they reach the retina. The convexity or concavity of the glasses, suited to the different degrees of flatness or convexity of people's eyes, is best determined by trial; observing only to use those glasses which are the least convex or concave of any, that will fit the eye: for since they cannot be put quite close to the eye, the less any glass is convex or concave the less it will magnify or diminish the pictures of objects upon the retina.

Were there no other use of dioptrics, than that of spectacles for defective eyes, the advantage that mankind receives thereby is certainly inferior to no other whatever, that is not absolutely requisite to the support of life; for as the sight is the most noble of all our senses, surely that instrument that relieves the eye when decayed, and supplies their defects, rendering them useful when otherwise almost useless, must of course be esteemed of the greatest advantage.

The ancients knew nothing of spectacles, the invention of which is said to have been about the year 1300.

SPECULARIS LAPIS, in natural history, a genus of tales, composed of large plates visibly separate, and of extreme thinness; and each fissile again separated into a number of plates still finer.

SPECULATIVE, something relating to the theory of some art or science, in contradistinction to practical.

SPECULUM, **MIRROR**, in optics, any polished body impervious to the rays of light; such as water in wells and deep rivers, polished metals, and glasses lined with mercury, or other opaque matter, popularly called looking-glass.

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SPEECH, the art or act of expressing a person's thoughts by certain signs invented for that purpose.

SPEECH, in grammar, an assemblage of several words ranged in order. Grammarians generally make eight parts of speech, i. e. eight kinds of words, generally used in discourse; viz. noun, pronoun, verb, participle, adverb, preposition, interjection and conjunction; each of which see under its proper article.

Others, particularly English grammarians, refer all words to four general heads or classes, viz. 1. Such words as denote things actually existing, or their properties, which are called nouns or names, as *house, tree, man, horse, convenient, large*, &c. 2. Such words as express action or passion, as *I love, I am loved*; and these are called verbs or affirmations. 3. Such words as denote the manner or way of doing or suffering, as *swiftly, slowly*, &c. which are called adverbs. 4. Particles, or such small words as serve to connect others together, in forming a sentence, as *and, or, also, before, after*, &c.

SPELL, in general, denotes the same with charm or amulet.

In the sea-language, the word *spell* signifies to do any work for a short time, and then leave it; therefore, a *fresh spell* is when fresh men come to work; and to give a *spell*, is to work in another's room.

SPELLING, in grammar, that part of orthography which teaches the true manner of resolving words into their syllables. See *Orthography*.

SPELTER, in natural history, the same with zinc.

* **SPENSER**, (EDMUND,) an English poet of the 16th century, was born at London, and educated in Pembroke-hall, Cambridge, where he took the degree of master of arts in 1576; but, at length standing for a fellowship without success, this disappointment together with the narrowness of his circumstances, forced him from the university; and we find him next taking up his residence with some friends in the North, where he fell in love with his Rosalind, whom he so finely celebrates in his Pastorals, and of whose cruelty he has written such pathetic complaints. The *Shepherd's Calendar*, which is so full of his unprosperous passion for Rosalind, was the first of his works of any note, and this he addressed by a short dedication in verse to Sir Philip Sidney, concealing himself under the humble title of *Immerito*. After he had staid some time

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in the north, he was prevailed upon by some friends to quit his obscurity, and come to London, that he might be in the way of promotion. The first step he made towards preferment was his acquaintance with Sir Philip Sidney, who was then in the highest reputation for his wit and polite accomplishments. Though nothing could have been more happy for Mr. Spenser than his being introduced to court by Sir Philip, yet he did not immediately receive any great benefit from it. He was indeed created poet laureate to Q. Elizabeth, but for some time only wore a barren laurel, and possessed the place without the pension. The lord treasurer Butleigh had no taste for Spenser's merit, and is said to have intercepted the queen's favour to him. Fuller, in his *Worthies*, observes, that her majesty upon Spenser's presenting some poems to her, ordered him a gratuity of an hundred pounds; but the lord treasurer objecting to it, said with some scorn of the poet, "What! all this for a song?" To which the queen replied, "Then give him what is reason." Spenser waited for some time, but had the mortification to find himself disappointed of the queen's bounty. Upon this he took a proper opportunity to present a paper to her majesty, in the manner of a petition, in which he reminded her of the order she had given in the following lines:

I was promis'd on a time,
To have reason for my rhyme;
From that time unto this season,
I received nor rhyme nor reason.
This paper had, however, the desired effect, for the queen reproved the treasurer, and immediately directed the payment of the hundred pounds she had at first ordered.

We find Spenser, some time after his appearance at court, in considerable esteem with the most eminent men of that time. In 1579, he was sent abroad by the earl of Leicester, but in what service he was employed is uncertain. He was afterwards recommended as secretary to the lord Grey of Wilton, on that nobleman's being appointed lord deputy of Ireland; and he was at length rewarded by a grant from queen Elizabeth of three thousand acres of land in the county of Cork.

In this retirement he finished his *Fairy Queen*, and here he was a more successful lover than when he courted his Rosalind. For the collection of his sonnets are a kind of short history of the progress of a new

amour, which we find ended in marriage, and gave occasion to an excellent Epithalamium; which no one could write so well as himself. Here he was visited by Sir Walter Raleigh in his return from the Portugal expedition in 1589, who persuaded him to return to England, and introduced him to the queen; but in the Irish rebellion under the earl of Desmond, our author was plundered and deprived of his estate, and seems to have spent the latter part of his life with much grief of heart, under the disappointment of a broken fortune. He died in 1598, and was interred in Westminster-Abbey. Besides his works already mentioned, he wrote a Poem called *Mother Hubbard's Tale*, *Hymns*, *Daphnida*, and *Elegies* on Sir Philip Sidney. He wrote likewise nine Comedies, in imitation of the admired Ariosto, which are inscribed with the names of the Nine Muses, but are unhappily lost.

SPERMA-CETI, in pharmacy, a white staky substance, prepared from the oil of a species of whale, called by ichthyologists catodon, because it has teeth only in the under jaw. The ignorance of the people who first used this medicine, gave it a name which seemed to express its being the semen of the whale; but it is, in reality, no more than a preparation of the oil with which that fish abounds.

Sperma-ceti is a fine, bright, white, and semi-pellucid substance, composed of a fine siccaceous substance, formed into oblong flakes, very light, soft, and unctuous to the touch, inflammable, soluble in oil, but not in watery menstrua: of scarce any smell, when fresh and fine, and of a soft, agreeable, and unctuous taste. The largest, firmest, and whitest flakes of it are to be chosen. It is liable to become rancid and yellowish in keeping, and the smaller fragments contract this bad quality sooner than the larger.

The first knowledge the world seems to have had of *sperma-ceti*, was the finding it swimming on the surface of the water in the northern seas: and we are not to wonder that people who knew no more of its origin than what they were informed of by those who found it so floating on the sea, referred it to the mineral class, supposing it to be bitumen formed in the bowels of the earth, and thrown up from the bottom of the ocean, as was the opinion of Schroder, and others of his time. It was soon after discovered, however, that the head of a peculiar species of whale afforded

afforded a fatty substance, which, when boiled, and properly prepared, was analogous to this. And hence it was soon deduced, that the masses of it first found were of the same origin; that they had been, formerly, an oily matter in this fish, which, getting loose on the perishing of the dead carcase, or by any other means, had been washed and bleached by the salt water, and the sun, into the form in which it was then found. The opinion of its being the sperm or semen of the whale, was about as early as the first discovery that it belonged to that animal, and seems to have been formed merely on account of its whiteness.

The species of whale from the head of which sperma-ceti was first prepared, and to which it was long thought to be peculiar, is of the number of those ranged in a peculiar genus by Artedi, under the name of catodon from their having teeth in their under jaw. He has distinguished this species by the name of catodon fistula in cervice, the toothed whale, with a pipe or opening for the discharge of water in its neck. See *Whale*.

The sperma-ceti of the shops was first made from the head of this fish; the oil obtained from its brain, and the diploe of the cranium, furnishing all that we had of it; and hence the considerable price it was long kept at. It was some time after found out, however, that any whale-oil would do as well as this, which occasioned the price to fall considerably. At present it is made in England from whale-oil of any kind, the settlings of our oilmen's larger vessels particularly, which are boiled with a lixivium of German pot-ash, or pearl-ashes, till white and firm; and after several other meltings, and a thorough separation of what saline particles might have got into the matter, it is, when cold, cut out with knives into the flakes we see it in. The process is easy, but it requires care, and a nice inspection towards the end: if not enough boiled, it is apt to turn yellow, and soon grow rancid.

Sperma-ceti is, therefore, oil of the animal kind, rendered very sweet, and fit for internal use. Its virtues are emollient and pectoral; it is good in coughs, and other disorders of the breast; and excellent in external applications, such as liniments, and the like: it readily dissolves in oil, or other fatty substances, for the latter purposes; and for the former, it blends with the yolk of an egg, and after that mixture with an aque-

ous fluid, and makes a pleasant emulsion.

SPERMATIC, in anatomy, something belonging to the sperm or seed. The spermatic vessels, called also vasa præparantia, are certain vessels appointed for bringing the blood to the testicles, &c. to be secreted and prepared into seed, and for carrying back again the blood remaining after the secretion is effected.

SPERMATOCELE, in medicine and surgery, a kind of rupture occasioned by a distention of the seminal vessels, whereby they are let fall into the scrotum.

SPHACELUS, in surgery and medicine, a total corruption or mortification of any part, occasioned by an interception of the blood and spirits. Sphacelus is distinguished from a gangrene, which is only a mortification begun; and, as it were, the road to a sphacelus.

SPHENOIDAL SUTURE, in anatomy, a suture thus called from its encompassing the os sphenoides, which it separates from the os frontis, the os petrosum, and the os occipitis.

SPHENOIDES, or **OS CRUCIFORME**, in anatomy, the seventh bone of the cranium or skull.

SPHENOPHARYNGÆUS, in anatomy, a pair of muscles, called also the pterygopharynx.

SPHENOSTAPHYLINUS, in anatomy, a muscle of the larynx. It descends from a round fleshy origination, near the root of a process of the os sphenoides, and from thence runs obliquely to the uvula, and is inserted into the hinder and upper part, where it joins its partner. It serves to draw the uvula upwards and backwards, and hinders the malicetated aliment from passing into the foraminarium, in deglutition.

SPHERE, in geometry, a solid body contained under one single surface, and having a point in the middle called the center, whence all lines drawn to the surface are equal.

Armillary SPHERE. See **ARMILLARY Sphere**.

SPHERE of activity of a Body, that determinate space or extent, to which, and no farther, the effluvia continually emitted from that body, reach; and where they operate, according to their nature. See **POWER**.

SPHERICAL ANGLE, **TRIANGLE**, and **TRIGONOMETRY**. See *Angle*, *Triangle*, and *Trigonometry*.

SPHERICS, that part of geometry which treats of the position and mensura-

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tion of arches of circles, described on the surface of a sphere.

SPHEROID, in geometry, a solid generated by the entire revolution of a semi-ellipsis about its axis. When the figure is generated by the revolution of the semi-ellipsis about its transverse or greater axis, it is called a prolate or oblong spheroid; and when generated by the revolution of a semi-ellipsis about its conjugate or lesser diameter, it is called an oblate spheroid. Every spheroid is equal to two thirds of its circumscribing cylinder.

SPHINCTER, in anatomy, a term applied to a kind of circular muscles, or muscles in form of rings, which serve to close and draw up several orifices of the body, and prevent the excretion of the contents of the sphincter vessel. See the article *Bladder*.

SPHINX, in sculpture, &c. a figure or representation of a monster of that name, famed among the ancients, now mostly used as an ornament in gardens, terraces, &c. It is represented with the head and breasts of a woman, the wings of a bird, the claws of a lion, and the rest of the body like a dog. It is supposed to have been engendered by Typhon, and sent by Juno to be revenged on the Thebans. Its office, they say, was to propose dark enigmatical questions to all passers by; and if they did not give the explication thereof, to devour them. It made horrid ravages, as the story goes, on a mountain near Thebes, and could not by any means be destroyed, till after Oedipus had solved the following riddle. "What animal is it that in the morning walks on four legs, at noon on two, and at night on three?" The answer was, "Man."

Among the Egyptians, the sphinx was the symbol of religion, on account of the obscurity of its mysteries: and on the same account the Romans placed a sphinx in the porch of their temples.

SPICA VIRGINIS, a star of the first magnitude, in the constellation Virgo. Its place is in the more southerly hand. Its longitude, according to Mr. Flamsteed, is $19^{\circ} 31' 22''$: its latitude, $2^{\circ} 1' 39''$ south.

SPICE, any kind of aromatic drug that has hot and pungent qualities: such are pepper, nutmeg, ginger, cinnamon, cloves, &c.

Some also apply the word to divers other medicinal drugs brought from the East: as senna, cassia, frankincense, &c.

SPIDER, in zoology, the name of a

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well known insect, of which we have a great number of species. The spider affords to the sagacious observer, as well without as with the assistance of glasses, many extremely curious particulars. As the fly, which is the spider's natural prey, is an animal extremely cautious and nimble, and usually comes from above, it was necessary the spider should be furnished with a quick sight, and an ability of looking upwards, forwards, and sideways, at the same time; and the microscope shews, that the number, structure, and disposition of its eyes, are wonderfully adapted to the serving all these purposes.

Most spiders have eight eyes: two on the top of the head or body, for there is no division between them, the spider having no neck; these look directly upwards: there are two more in front, placed a little below these, and discovering all that passes forwards, and on each side: a couple more, one whereof points sideways forwards, and the other sideways backward; so that it can see almost quite round it. All kinds of spiders have not, however, this exact provision; for in some we find ten, and in others only six, or four. The eyes of the spider are not pearly; and the field-spiders, or long legs, have no more than two eyes. Whatever be the number of the spider's eyes, they are however all immovable and transparent, and are situated in a most curious manner. The best way of viewing them with the microscope, is to cut off the legs and tail, and leave only the head for examination. All spiders have eight legs, which they employ in walking; and two shorter, called arms, which they use in seizing their prey. All the legs are thickly beset with hairs; each has six joints, and ends with two hooked claws, which are serrated on their inside; by means of these teeth, or jags in their claws, they seize very fast hold of any thing, and behind these there is a sort of spur, which is perfectly smooth. Besides these, nature has allotted this creature, for the seizing its prey, a pair of sharp crooked claws, or forceps, in the forepart of its head. These stand horizontally, and, when not exerted for use, are concealed in two cases contrived for their reception, in which they fold like a clasp-knife, and there lie between two rows of teeth, which are likewise employed to hold fast the prey. Each of these claws, or pincers, has a small slit near its point, according to

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Lewenhoeck, like that in a viper's tooth, through which he supposes that a poisonous juice is, in like manner, thrown out. But Dr. Mead, in his Essay on Poisons, dissenting wholly from this opinion, having never been able, on repeated examinations, to discover any such opening, not even in the claws of the great American spider; which, being above fifty times bigger than any of the European spiders, would more easily have discovered this opening, if nature had allotted any to this part of the animal. Besides, repeated observations also convinced him that nothing dropped out of the claws, which were always dry, while the spider bit any thing, but that a short white proboscis was, at the same instant, thrust out of the mouth, which instilled a liquor into the wound. And the same author observes, that the quantity of liquor, emitted by our common spiders when they kill their prey, is visibly so great, and the wounding weapons so minute, that they contain but a very inconsiderable portion thereof, if it were to be discharged that way. *Baker's Microscope.*

Spiders frequently cast their skins, which may be found in their webs perfectly dry and transparent; and from such skins the forceps, or claws, for they are always fixed with the skins, may easier be separated, and examined with much greater exactness, than in the common spider while living. The spider's manner of weaving its web is very wonderful. The creature has five little teats, or nipples, near the extremity of the tail; from these there proceeds a gummy liquor, which adheres to every thing it is pressed against, and, being drawn out, hardens instantly in the air, and becomes a string, or thread, strong enough, to bear five or six times the weight of the spider's body. This thread is composed of several finer ones, which are drawn out separately, but unite together at two or three hairs breadth distance from the creature's body. These threads are finer or coarser, according to the bigness of the spider that spins them. Mr. Lewenhoeck has computed, that a hundred of the single threads of a full grown spider are not equal to the diameter of the hair of his beard; and consequently, if the threads and hair be both round, ten thousand such threads are not bigger than such a hair. He calculates farther, that, when young spiders first begin to spin, four hundred of them are not larger than one which is of

full growth: allowing which, four millions of a young spiders's threads are not so big as the single hair of a man's beard.

The eggs of some spiders are a very pleasing microscopic object; they are round at one end, and flattish at the other, with a depression in the center of the flattish end, and a yellowish circle round it. The colour of these eggs is a pearly or blueish white, and when the young spiders hatch, they come out in their perfect form, and run about very nimbly. The female spider deposits her eggs, to the number of five or six hundred, in a bag composed of her own web, which she either carries under her belly, or hides in some very safe recess. *Phil. Trans. N^o 272.*

SPIEL, in the glass-trade, an iron instrument, hooked at the end and pointed, with which the workmen take the metal up out of the melting-pots, for proofs or essays, to see whether it be fit for work.

SPIKE, or Oil of SPIKE, a name given to an essential oil distilled from lavender, and much used by the varnish-makers, and the painters in enamel, and of some use in medicine. It is brought from Provence, and other parts of France, where the lavender is called *aspic*, and thence came the name of oil of spike. This oil, when in perfection, is very limpid; of a pleasant yellowish colour; very fragrant; possessing, in an eminent degree, the peculiar smell generally admired in the flowers. In medicine it is used, both externally and internally, in paralytic and lethargic complaints, rheumatic pains, and debilities of the nervous system. The dose is from one drop to five or six; but our artificers, in their varnishes, use more of this oil than the apothecaries do: and wanting it at a cheap rate, they have taught the druggists, who used to import and sell it to them, so many ways of adulterating it, that at present it is scarce any where to be met with genuine: and so coarse an ingredient as common oil of turpentine is used as the basis of all the counterfeits: they also sometimes adulterate it with spirit of wine. But both these cheats are easily discovered: that mixed with spirit of wine may be known by only mixing the whole with water, in which case the water, uniting with the spirit, leaves the oil at the top alone; that mixed with oil of turpentine, is discovered by burning a spoonful of it; for the genuine oil of spike

Spice burns with a clear flame and without smoke, and its smell, while burning, is very fragrant; whereas, when there is oil of turpentine mixed, it burns more furiously, emits a thick smoke, and is of a very bad smell. This oil is distilled from the smaller species of lavender, in the common way, by the alembic. See *Lavandula*.

SPINA RIFIDA, in anatomy, a parting of the spinal processes into two rows: the existence of such a case is doubted. See *Spine*.

SPINA VENTOSA, in surgery and medicine, that species of corruption of the bones which takes its rise in the internal parts, and by degrees enlarges the bone, and raises it into a tumour, and which, when it happens to children, is termed by Severinus, and many others, *pædarthrocaces*.

SPINACHIA, or SPINACIA, SPINACH, or SPINNAGE, in botany, a genus of plants: it hath an apetalous flower, consisting of many stamens included in the flower-cup, which are produced in spikes upon the male plants, which are barren; but the embryos are produced from the wings of the leaves on the female plants, which afterwards becomes a roundish or angular seed, which in some sorts has thorns adhering to it.

SPINALIS, in anatomy, the names of several muscles, &c. of the spine, but more particularly that of a muscle on the side of the neck, arising from the five superior processes of the vertebrae of the thorax, and the inferior of the neck; and which in its ascent, becoming more fleshy, is inserted into the inferior part of the vertebrae of the neck laterally. It serves to draw the neck backwards.

SPINE, SPINA DORSI, in anatomy, the bony column reaching from the head down to the anus; being the series or assemblage of vertebrae which sustain the rest of the body, contain the spinal marrow, and to which the ribs are connected.

SPINET, or SPINNET, a musical instrument ranked in the second or third place among the harmonious instruments of the same nature with the harpsicord.

SPINNING, in commerce, the act or art of reducing silk, flax, hemp, wool, hair, or other matters, into thread. Spinning is either performed on the wheel, with a distaff and spindle, or with other machines proper for the several kinds of working. Hemp, flax, nettle-thread, and the like vegetable matters, are to be wetted in spinning; silks, wools, &c.

are to be spun dry, and do not need water; but there is a way of spinning silk as it comes off the cases or balls, where hot and even boiling water is to be used.

SPINOSISM, the doctrine of Spinoza; or atheism and pantheism, proposed after the manner of Spinoza. Benedict Spinoza, or Espinoza, was a man well known in Holland. He was born a Jew at Amsterdam, but did not make profession of any religion, either the Jewish or Christian. — He composed several books in Latin; the most celebrated whereof is his *Tractatus Theologico-Politicus*, wherein he endeavours to overturn the foundation of all religion: the book, accordingly, was condemned by a public decree of the states; though it has since been sold publicly, and even reprinted, both in Latin and French, in that country, and lately in English at London. Spinoza, here, insinuates, that all religions are only political engines, calculated for the public good; to render the people obedient to magistrates, and to make them practise virtue and morality. He does not here lay down his notion of the Deity openly, but contents himself with suggesting it. — In his *Ethics*, published among his posthumous works, he is more open and express; maintaining, that God is not, as we imagine him, an infinite, intelligent, happy, and perfect being; nor any thing, but that natural virtue, or faculty, which is diffused throughout all creatures. Spinoza, in his *Tractatus* above mentioned, is very full on the subject of the authority of the scriptures; and endeavours to shew, that the Pentateuch is not the work of Moses, contrary to the common opinion, both of the Jews and Christians. He has also his particular sentiments, as to the authors of the other books. — This part of the work has been answered by M. Huet, in his *Demonstratio Evangelica*, and by M. Simon in his *Hist. Crit. du Vieux Test*. Spinosism is a species of naturalism, or pantheism, or hylotheism, as it is sometimes called, that is, of the dogma, which allows of no other God but nature, or the universe; and, therefore, makes matter to be God. Accordingly, Buddeus, in a dissertation *De Spinozismo ante Spinozam*, proves at large, that Spinoza's doctrine of God and the world is far from being his own invention, but that it had been held by many philosophers of different sects, both among the Chaldeans and Greeks. It is certain, the opinion of the Stoics, and those who held

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held an anima mundi, was not far from it. Lucan introduces Cato discoursing thus:

*Esse Dei sedes nisi terra, & aër,
Et caelum, & virtus? Superes quid queri-
mus ultra?*

*Jupiter est quodcumq; vides, quocumq; mo-
veris.*

LUC. PHARS. lib. ix. v. 578.

The chief articles of Spinoza's system are reducible to these: that there is but one substance in nature; and that this only substance is endued with an infinite number of attributes, among which are extension and cogitation. That all the bodies in the universe are modifications of this substance considered as it is extended; and that all the souls of men are modifications of the same substance, considered as cogitative. That God is a necessary and infinitely perfect being, and is the cause of all things that exist, but is not a different being from them. That there is but one being and one nature; and that this nature produces, within itself, by an immanent act, all those which we call creatures. And that this being is at the same time both agent and patient, efficient cause and subject; but that he produces nothing but modifications of himself. Thus is the Deity made the sole agent as well as patient in all evil, both physical and moral; that called *malum poenae*, as well as *malum culpa*; a doctrine fraught with more impieties than all the heathen poets have published concerning their Jupiter, Venus, Bacchus, &c.

Several have undertaken to refute Spinoza's doctrine, particularly the learned Dr. Clarke; we also have an examination of Spinozism, and Mr. Bayle's objections against this system, by Mons. de Jariges, in the Mem. de l'Acad. de Berlin. Wolfius has also given a refutation of Spinoza, in his Theol. Nat. Part 2.

SPIRAL, in geometry, a curve line of the circular kind, which, in its progress, recedes from its center.

SPIRAL, in architecture and sculpture, implies a curve that ascends, winding about a cone or spire, so as all the points thereof continually approach the axis. It is distinguished from the helix by its winding around a cone; whereas the helix winds in the same manner around a cylinder.

Proportional SPIRALS, such spiral lines as the rhumb lines on the terrestrial

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globe, which, because they make equal angles with every meridian, must also make equal angles with the meridians in the stereographic projection on the plane of the equator; and therefore will be, as Dr. Halley observes, proportional spirals about the polar point.

SPIRE, in architecture, was used by the ancients for the base of a column, and sometimes for the astragal or torc. But, among the moderns, it denotes a steeple that continually diminishes as it ascends, whether conically or pyramidally.

SPIRIT, in metaphysics, an incorporeal being or intelligence; in which sense, God is said to be a spirit, as are angels and the human soul. The word spirit; indeed, used in general to denote all thinking intelligent substances; but it would be the height of folly to imagine, because this name is applied to the Creator as well as to the human soul, that therefore they partake of one common nature, and differ only as different modifications of the same substance: wherefore, when we call God a spirit, we ought by no means rashly to presume, that he is so in the same sense in which the human soul is a spirit. However, though we readily own there may be various ranks of spiritual beings: yet as we have no conceptions of the powers and operations of intellectual natures distinct from those of our own minds, we are necessitated to conceive of them in a manner suited to our knowledge; and when we would rank them into species, according to the degrees of superiority they are imagined in the scale of being, we ascribe to them what we find most excellent in ourselves, as knowledge, thinking, foresight, &c. and those in different measures, proportioned to the station peculiar to each rank. But that this is a very imperfect way of distinguishing the various orders of intellectual beings, needs not many words to make appear; especially if we consider, that the manner of communicating their thoughts without the intervention of bodily organs, is a thing to us altogether incomprehensible; which necessarily leads us to suppose, that they have ways of perception and knowledge, whereof our faculties cannot give us any notice.

SPIRITS, or **ANIMAL SPIRITS**, in physiology. See *Animal spirits*.

Our perceptions and actions are supposed to depend on the facility with which these spirits pass from the brain to

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the nerves, and back from the nerves to the brain; for if the brain, the cerebellum, or the spinal marrow is hurt, there happens in all the parts where the nerves are distributed, which proceed from the disordered part, convulsions and palsies; and if any nerve is tied or cut, the parts below the ligature lose their sense and motion, while those above continue in their former state.

SPIRIT, in chemistry, a name applied to several very different substances; however, in general, it denotes any distilled volatile liquor that is not insipid, as phlegm, or pure water, nor inflammable as oil: but under this general idea are comprehended liquors of quite opposite natures, some being acid, and others alkaline; which last are such enemies to the former, that as soon as they are put together they raise a violent effervescence, and grow hot; and to these may be added a third sort, called vinous or inflammable spirits: which though very subtle and penetrating, are not manifestly either acid or alkaline.

Medicinal Virtues of SPIRITS. The too free use of inflammable or vinous spirits, is attended with very bad effects; as the body is thereby greatly attenuated, the strength impaired, and the brain stupified. However, as Dr. Pringle justly observes, we ought not to confound the necessary and moderate use of spirits with the vice of indulging in them to excess. So far, therefore, from thinking the moderate use of spirits detrimental to soldiers, and others, who are exposed to the extremes of heat and cold, and to moist and bad air, he even recommends it; and as to soldiers in particular; he observes, that spirits, even when drank to excess, tend more to weaken the constitution than to produce any of the common camp-diseases. It is the abuse, therefore, of vinous spirits that ought to be condemned; since, taken in moderation, they can do no harm; and if properly accommodated to circumstances, may have very good effects. Spirits are also of use, in external applications, to wounds and sores; as they stimulate the fluids, resist putrefaction, and quicken the pulse when absorbed. Tinctures of absorbent and aromatic powders are often prescribed with the same intention; by reason they partake of the nature of their ingredients, but principally of the spirit.

As to the volatile spirits distilled from

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animal and other substances, they are in general extremely pungent and acrimonious; applied to the skin, and prevented from exhaling, they inflame the part, and produce the effects of caustics; they also liquefy the animal juices, and dissolve the coagula made from them with acids; with which being mixed, they effervesce, and unite into neutral salts.

With regard to their medical virtues, they stimulate the nervous system, attenuate viscid humours, promote a diaphoresis, and other natural secretions, and absorb acidities in the prime viæ: they are particularly useful in lethargic and apoplectic cases, in hypochondriacal and hysterical disorders, and the languors, head-achs, inflations of the stomach, flatulent colics, and other symptoms which attend them. However, they are generally found more serviceable in aged persons, and in phlegmatic habits, than in the opposite circumstances: in febrile and inflammatory distempers they are hurtful, except in such fevers as are accompanied with a cough, hoarseness, and redundancy of phlegm: they are most conveniently exhibited in a liquid form, largely diluted with water, or other convenient liquors: the dose being from five or six to thirty or more drops.

The acid spirits drawn from fossils, and applied to animal bodies, coagulate the fluids, and mortify the solids: by being diluted with water, they approach to the nature of vinegar. Metallic substances, dissolved in these spirits, increase their corroding splaculating quality; so as sometimes to occasion convulsions.

SPIRITUAL, in general, something belonging to, or partaking of, the nature of spirit.

The spiritual courts, in law, are such as have jurisdiction in matrimonial causes, and for probate of wills, and granting administration of goods; as also in regard to tythes, and in cases of defamation, &c.

SPIRITUALITIES of a Bishop, the profits that he receives as a bishop, and not as a baron of parliament; such are the duties of his visitation, presentation-money, what arises from the ordination and institution of priests, the income of his jurisdiction, &c.

SPLEEN, in anatomy, a soft spongy viscus, situated in the left hypochondrium, under the diaphragma between the ribs and the stomach, above the left kidney. It is tied to the peritonæum, to the midriff, and to the omentum: it

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is of a bluish or leaden colour, of an oblong figure, thick at the edges, and not thin at the liver:

SPLEEN is also used for a disease by physicians more usually called the hypochondriac disease.

SPLENETIC, a person affected with oppilations and obstructions of the spleen. In splenetic people, the spleen is swelled beyond the natural bulk, or hardened so as to shew a serous tumour thereon.

SPLENETIC VESSEL, a large artery and vein of the spleen.

SPLENTS, or **SPLINTS**, in surgery, pieces of wood, used in binding up broken limbs.

SPLINTER, a small shiver of wood, or the like. The splinters of fractured bones, if loose, are to be carefully removed, otherwise replaced.

SPODIUM, in pharmacy, one of the foulest recrements of copper, being nothing but the worst and heaviest parts of the *cadmia ostracitis*, thrown up in such coarse pieces by the blast of the bellows, that it does not adhere to the roof or sides of the furnace, but falls down again into several parts of the furnace; and being collected along with many other kinds of foulnesses, in form of a blackish heavy matter, is indeed no better than the sweepings of the furnaces where the copper is refined.

SPOILS, whatever is taken from the enemy in time of war. Among the ancient Greeks, the spoils were divided in common among the whole army, only the general's share was largest; but among the Romans, the spoils belonged to the Republic.

SPONDEE, in the Greek and Latin prosody, a foot of verse consisting of two long syllables; as *vertunt*.

SPONGIOSA, in anatomy, an epithet given to several parts of the body by reason of this texture, which is porous and cavernous, like that of a sponge.

SPONSORS, among Christians, those persons, who, in the office of baptism, answer, or are sureties, for the persons baptized. In the ancient church, there were three sorts of sponsors. 1. For children, who could not answer for themselves; and in most cases, parents were sponsors for their own children. 2. For such persons as, by reason of sickness or infirmity, were in the same condition with children; who might be baptized, if their friends testified, that they had be-

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fore hand desired baptism, and at the same time became their sponsors. 3. For all adult persons in general; for these too had their sponsors, as no persons were baptized without them. It is observable, that antiently no more than one sponsor was required, namely, a man for a man, and a woman for a woman; however, in the case of infants, no regard was had to the difference of sex; for a virgin might be sponsor for a male child; and a father for his children, whether male or female. In the modern Christian church, the office of sponsors, or sureties in baptism, is better known than practised; we call them godfathers and godmothers.

SPONTANEOUS, in the schools, a term applied to such motions of the body and mind as we perform of ourselves, without constraint. The word is formed from the Latin adverb *sponte*, of one's own accord.

SPORADES, among antient astronomers, a name given to such stars as were not included in any constellation.

SPORADIC, is used for such diseases as reign in the same place and time.

SPOTS, in astronomy, certain places of the sun or moon's disc, observed to be either more bright, or darker, than the rest, and accordingly, called *faculae* and *maculae*.

SPRING, in natural history, a fountain or source of water arising out of the ground. The origin of springs, or fountains, is a thing greatly controverted among naturalists.

The hypothesis of Dr. Edmund Halley, is as follows: It is evident from experience, that there perpetually arises a vapour from the surface of the sea, rivers, and lakes; this vapour is carried through the atmosphere, in the form of a cloud or mist, by the impulse of winds; and, according as it meets with a colder air, or is stopped in its progress by mountains, it condenses, and falls down in dew, snow, or rain; the water, in whichever of these shapes it descends, finds several chinks and crannies, through which it insinuates itself into the main body of the hills or mountains, where it is lodged in beds of stone or clay, according to the nature of the soil; and by degrees, increasing its store and strength, it forces its way thro' the first outlet it meets with, and takes the name of a temporal or perennial fountain, according to the capacity of the basin, which supplies its current.

This beautiful hypothesis, which has been

been received with universal applause and satisfaction by the learned world, we shall endeavour to demonstrate, by the two following propositions: 1. That the vapours which arise from the sea, are much more than sufficient to supply both the surface of the earth and the rivers with water. 2. That the mountains do, by their particular structure and formation, attract, and, as it were, arrest the vapours and the rain that fluctuate about in the atmosphere: and, having collected them in their reservoirs, dismit them again through their sides, either in perpetual or intermitting currents.

With regard to the first, the ingenious author of this theory made the following experiment: he took a vessel of water, and made of the same degree of saltiness with that of the sea, by means of the hydrometer; and having placed a thermometer in it, he brought it, by means of a pan of coals, to the same degree of heat with that of the air in the hottest summer. He then placed this vessel with the thermometer in it, on one scale, and nicely counterpoised it with weights in the other; after two hours, he found, that about the sixtieth part of an inch was gone off in vapour, and consequently in twelve hours, the length of a natural day, one tenth of an inch would have been evaporated.

From this experiment it follows, that every ten square inches of the surface of the water yield a cubic inch of water in vapour per day, every square mile 6914 tons, and every square degree (or 69 English miles) 33 millions of tons. Now if we suppose the Mediterranean to be 40 degrees long, and 4 broad, at a medium, which is the least that can be supposed, its surface will be 160 square degrees from whence there will evaporate 5180 millions of tons per day, in the summer time.

The Mediterranean receives water from the nine great rivers following, viz. the Iberus, the Rhine, the Tyber, the Po, the Danube, the Neister, the Borysthenes, the Tanais, and the Nile; all the rest being small, and their water inconsiderable. Now let us suppose that each of these rivers conveys ten times as much water to the sea as the Thames; which, as is observed, yields daily 76,032,000 cubic feet, which is equal to 263 millions of tons; and therefore all the nine rivers will produce 1827 millions of tons; which is little more than one third of the quan-

tity evaporated each day from the sea. The prodigious quantity of water remaining, the doctor allows to rains, which fall again into the seas, and for the uses of vegetation, &c.

As to the manner in which these waters are collected, so as to form reservoirs for the different kinds of springs, it seems to be this: the tops of mountains, in general, abound with cavities, and subterraneous caverns formed by nature to serve as reservoirs; and their pointed summits, which seem to pierce the clouds, stop those vapours which fluctuate in the atmosphere, and being condensed thereby, they precipitate in water, and by their gravity easily penetrate through beds of sand and lighter earth, till they are stopped in their descent by more dense strata, as beds of clay, stone, &c. where they form a basin or cavern, and work a passage horizontally, and issue out at the side of the mountain.

Many of these springs running down by the vallies, between the ridges of hills, and uniting their streams, form rivulets or brooks; and many of these again, uniting on the plain, become a river.

Medicinal Virtues, &c. of SPRINGS. These are owing to the different qualities and temperament of the strata through which these waters may be collected, or pass: if those reservoirs of water in the body of mountains be situated where mineral ores abound, or the ducts and feeding streams run through mineral earths, it is easy to conceive that particles of metal will mix with, and be absorbed by the water, which being saturated therewith, becomes a mineral spring or well. If salt, sulphur, lime-stone, &c. abounds in the strata, through which the water passes, it will then be saline, sulphureous, lime-water, &c. If sulphur and iron should both abound in the parts of the hill, whence the waters come, the waters will partake of the warmth or heat which is occasioned by the mixture of two such substances in the earth, where they are found.

SPRING, Ver. in cosmography, one of the seasons of the year; commencing, in the northern parts of the world, on the day the sun enters the first degree of Aries, which is about the twenty-first of March, and ending when the sun leaves Gemini.

SPRING, in mechanics, Denotes a thin piece of tempered steel, or other elastic substance; which, being wound up, serves to put several machines in motion by its elasticity, or endeavour to unbend itself: such

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such is the spring of a clock, watch, and the like.

The spring of a lock, gun, pistol, or the like, is a piece of steel violently bent; which, being set at liberty, beats back the bolt of the lock, or strikes down the cock.

SPRING-TIDE. See *Tide*.

SPRINGY BODIES, the same with elastic ones; or such as, having had their figure changed by the stroke of another body, can recover again their former figure, which bodies not elastic cannot do.

SPUNGE, in natural history, a plant of so very singular a structure, that many authors have supposed it not merely a vegetable, but of an intermediate nature between that and the animal kind, and have ranked it among the number of an imaginary race of beings, which they call zoophytes. Spunge, however, is a genuine plant; nor is there in the creation any such class of beings as zoophytes, or any creature that is partly plant, partly animal.

We meet with sponges, in the shops, often in the whole plant; sometimes only in pieces of larger ones; in either case, it is of a perfectly irregular figure, and is only to be distinguished by its texture, which is cavernous, like that of a honey-comb; its elasticity, which makes it, after passing into a very small compass, immediately expand to its full bulk again, on taking away the pressure; and by its property of imbibing, perfectly, a large quantity of water, and as readily parting with it again, on squeezing. Spunge is to be chosen perfectly clean, and free from stones within, or from a crustaceous and hard matter without; of as pale a colour as may be, and with small holes, and such as is lightest. The greatest part of the sponge we use, is brought from Aleppo and Smyrna. It grows in the Archipelago, at considerable depths, on the rocks about some of the islands there, and multitudes of people make a trade of diving for it. It is also common in the Mediterranean and many other seas, though in general browner or yellower, and not so fine as that of the Archipelago. It grows in large masses to rocks and stones, sometimes to large shells; and is sometimes round, sometimes flat, sometimes hollow like a funnel. It is one of the cryptogamiæ of Linnæus, one of the herbæ marinæ of Tournefort, and one of the herbæ imperfectæ of Mr. Ray. It is described by all the botanical writers, under the name of *spongia marina alba*,

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and *spongia globosa*, the white or round sponge. Distilled by a retort, it yields a large quantity of white milky phlegm, of a filthy smell; after this a large portion of an urinous reddish liquor, with a little of a dry, volatile, urinous salt, and a thick, brownish, fetid oil. The remainder, in the retort, yields only a small portion of a lixivial salt, and that not merely alkaline.

Spunge calcined to a blackness, and reduced to powder, has been lately brought into great use as a sweatener of the blood, and a diuretic; some have pretended even to cure leprosy with it, and others have extolled it against the bite of a mad dog; but these are virtues less certainly known of it.

SPUNGE, is also used, in gunnery, for a long staff or rammer, with a piece of sheep or lamb skin wound about its end, to serve for scouring great guns, when discharged, before they are charged with fresh powder.

SPUNGING, in gunnery, the cleaning a gun's inside with a sponge, in order to prevent any sparks of fire from remaining in it, which would endanger the life of him who should load her again.

SPUR, a piece of metal, consisting of two branches encompassing a horseman's heel, and a rowel in form of a star, advancing our behind, to prick the horse.

SPY, a person hired to watch the actions, motions, &c. of another; particularly of what passes in a camp. When a spy is discovered, he is hanged immediately.

SQUADRON, in military affairs, a body of horse whose number of men is not fixed; but is usually from one to two hundred.

Each squadron usually consists of three troops of fifty men each.

SQUADRON of Ships, a division or part of a fleet, commanded by a vice-admiral, or commodore.

SQUARE, in geometry, a quadrilateral figure, both equilateral and equiangular. To find the area of a square, seek the length of one side; multiply this by itself, and the product is the area of the square.

SQUARE-NUMBER, the product of a number multiplied into itself. Thus 4, the product of 2 multiplied by 2; or 16, the product of 4 multiplied by 4; are square numbers.

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SQUARE-ROOT, a number considered as the root of a second power or square number; or a number by whose multiplication into itself, a square number is generated.

SQUARE, an instrument consisting of two rulers, or branches, fastened perpendicularly at one end of the extremes, so as to form a right angle: it is of great use in the description and mensuration of right angles, and laying down perpendiculars.

SQUATT, among miners, a small bed of ore less valuable than a vein or lode, as reaching only a little way.

SQUINTING. See *Strabismus*.

SQUIRREL, in zoology, the English name of a genus of quadrupeds of the order of the glires, the fore-teeth of which are prominent; it has no canine teeth; and its legs are formed both for climbing and leaping. The common reddish brown squirrel, with a white belly, is a very little animal, with an extremely long and bushy tail. But besides this, there are several other species; as the American grey squirrel, with a smaller tail, and twice as large as the common kind; the Ceylon blackish squirrel, with a very large tail and about the size of the common squirrel; the flying-squirrel, with the sides extended, so as to be able to leap from one tree to another at a great distance; and, lastly, the Barbary squirrel, of a blackish tawney brown colour, with variegated sides.

STABLE, a place or house for horses, &c. furnished with stalls and proper apartments to contain their food, &c.

STACK of Wood, among husbandmen, a pile of three feet long, as many broad, and twelve feet high.

STADIUM, an ancient Greek long measure, containing 125 geometrical paces, or 615 Roman feet, corresponding to our furlong.

STADTHOLDER, **STADTHOULDER**, or **STATHOLDER**, a governor or lieutenant of a province in the United Netherlands; particularly that of Holland; where the word is most used, on account of the superior importance of the government of that province. *Ménage* derives the word from *stadt*, state, and *houder*, holding, q. d. lieutenant of the states: others will have it compounded of *stad*, or *stade*, stad, or place, and *holder*, holding; in regard this officer held the place of the counts, and represented them in their absence. The stadtholder, that is the stadtholder of Hol-

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land, is the first member of the republic; he is chief of all the courts of justice, and may preside therein when he pleases. All sentences, judgments, &c. are dispatched in his name.—When an office becomes vacant in any of the courts, the states propose three persons to the stadtholder, who is to choose one of them. He can even pardon criminals, which is a sovereign prerogative, and has the choice of scabines, or chief magistrates in each city, to which end the council of the city present him two persons, one of which he appoints.

STAFF, in music, five lines on which, with the intermediate spaces, the notes of any song or piece of music are marked.

STAFF, in surveying, a kind of stand whereon to mount a theodolite, circumferentor, plain table, or the like, for use. It consists of three legs of wood joined together at one end, whereon the instrument is placed, and made sharp at the other to enter the ground. Its upper end is usually fitted with a ball and socket.

* **STAFFORDSHIRE**, a county of England, forty-four miles in length, and twenty-seven in breadth, bounded on the west by Shropshire, on the north by Cheshire, on the east by Derbyshire and Warwickshire, and on the south by Worcestershire. It contains one hundred and thirty parishes, nineteen market-towns, and sends ten members to parliament. The principal rivers are the Trent, the Dove, the Sow, the Cherner, the Lime, the Tern, the Penk, and the Manyfold; the air is pleasant, mild, and wholesome, and the soil in the south part good and rich, though not without heaths, which take up a very considerable tract of ground; but it abounds in coal pits, and iron mines. The middle is level and plain, and the north is hilly and barren, being full of heaths and moors. There are also good stone quarries, plenty of alabaster, and lime-stone. The county town is Stafford.

STAG, in zoology, a very stately and beautiful animal. People are apt to confound it with the common fallow deer, but with great impropriety, being of twice the size, and different in many other respects: the head is remarkably large; the neck strong and thick, the eyes are full and large; the ears long and patulous; the horns tall, almost erect, and of a beautiful form; they rise each with a single and elegant stem, which continues its form to the top, only sending

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ing off branches and divarications: they are hairy when first formed, but afterwards they become very strong, and lose that downy appearance. The body of the stag is round and plump, the back somewhat flattened, and the belly prominent: the legs are long, the hoofs cloven, the fur deep, thick, and of a tawny reddish colour.

STAGE, in the modern drama, the place of action and representation, included between the pit and the scenes, and answering to the proscenium, or pulpitum, of the ancients. The laws of the stage are the rules and decorums to be observed, with regard to the economy and conduct of a dramatic performance to be exhibited on the stage. These relate principally to the unities, the disposition of the acts and scenes, the unravelling, &c.

STAGGERS, or **STAVERS**, in farriery. See *Stavers*.

STAIR-CASE, in architecture, the ascent inclosed between walls, or a balustrade, consisting of stairs, or steps, with landing-places and rails, serving to make a communication between the several stories of a house. The construction of a complete stair-case is one of the most curious works in architecture. The common rules to be observed therein are as follows: 1. That it have a full free light, to prevent accidents of slipping, falling, &c. 2. That the space overhead be large and airy, which the Italians call *un bel sficato*, i. e. good ventilation, in regard a man spends much breath in mounting. 3. That the half-pace, or landing-places, be conveniently distributed for repassing in the way. 4. That to prevent rencounters, &c. the stair-case be not too narrow: however, this last is to be regulated by the quality of the building. 5. That care be taken in placing the stair-case, so as the stairs may be distributed without prejudice to the rest of the building.

STALACTITE, or **STALACTAGNIA**, **STONY ICICLES**, in natural history, crystalline spars formed into oblong, conical, round, or irregular bodies, composed of various crusts, and usually found hanging in form of icicles, from the roofs of grottos, &c. Of this class there are various species, as the hard, white stalactite; the white, shattery stalactite; and the yellow shattery crystalline stalactite, &c.

STALK, in botany, the stem or

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stock of a plant. Stalks are distinguished into several kinds, viz. the naked stalk, which has no leaves on; crested stalk, which has furrows, or ridges; winged stalk, which has leaves on both sides; striped stalk, which has two or more colours, &c.

STALLION, or **STONE-HORSE**, in the manege, an ungeld horse, designed for the covering of mares, in order to propagate the species. See *Horse* and *Mare*.

STAMINA, in botany, those fine threads or capillaments growing up within the flowers of tulips, lilies, and most other plants, around the style or pistil. See *Plant*.

The word is Latin, and literally signifies threads.

STAMINA, in the natural body, are defined to be those simple original parts, which existed first in the embryo, or even in the seed, and by whose distinction, augmentation, and accretion, by additional juices, the animal body, at its utmost bulk, is supposed to be formed.

STAMINEOUS, in botany, a term used by authors, for those flowers of plants which have no petals, or flower-leaves, but consist only of a number of stamina and pistils placed in a cup. This cup is sometimes mistaken for a flower, and its leaves thought to be true petals, but they remain when the stamina are fallen and become the capsules containing the seed; which, according to Tournefort, is the true character of a cup, not of a flower.

STAMP-DUTIES, certain impositions laid on all parchment and paper, on which deeds, grants, or other instruments, or any process in law or equity, are ingrossed or written. The stamp-duties are also extended to almanacks, news-papers, pamphlets, cards, and dice. All pamphlets above a sheet, and under six sheets in octavo, twelve in quarto, or twenty in folio, are subject to a stamp-duty of two shillings per sheet.

STAMPS, in metallurgy, a sort of large pestles, lifted up by water-wheels, and serving to beat to powder the ores, and the refuse of the ores, of metals. This engine is called the stamping-mill, and sometimes the knocking-mill.

STAND, in commerce, a weight from two hundred and a half to three hundred, of pitch.

STANDARD, in war, a sort of banner or flag borne as a signal for the joining

ing together the several troops belonging to the same body.

The standard is usually a piece of silk, a foot and a half square, on which are embroidered the arms, device, or cypher, of the prince, or of the colonel: it is fixed on a lance eight or nine feet long, and is carried in the center of the first rank of a squadron of horse. The standard is used for any martial ensign of horse, but more particularly for that of the general, or the royal standard: those borne by the foot are rather called colours.

STANDARD, in commerce, the original of a weight, measure, or coin, committed to the keeping of a magistrate, or deposited in some public place, to regulate, adjust, and try the weights used by particular persons in traffic.

The justness of weights and measures is of that importance to the security and good order of trade, that there is no civilized nation but makes it a part of their policy, to preserve the equality thereof by means of standards. The standards of weights and measures in England are appointed by Magna Charta to be kept in the exchequer by a special officer, called the clerk, or comptroller of the market.

The standard of gold-coin is twenty-two carats of fine gold and two carats of alloy in the pound weight troy: and the French, Spanish, and Flemish gold are nearly of the same fineness. The pound weight is cut into forty-four parts and a half, each current for twenty-one shillings. The standard of silver is eleven ounces and two penny-weights of silver, and eighteen penny-weights of alloy of copper. Whether gold or silver be above or below standard, is found by assaying, and the hydrostatical balance.

STANDARDS, or STANDELS, in husbandry, young trees, reserved at the felling of woods, for the growth of timber.

STANNARIES; the mines and works where tin is dug and purified, as in Cornwall, Devonshire, &c. There are four courts of the stannaries in Devonshire, and as many in Cornwall, and great liberties were granted them by several acts of parliament, in the time of Edward I. &c. though somewhat abridged under Edward III. and Charles I.

STANZA, in poetry, a certain stated number of grave verses containing some perfect sense, terminated with a rest or pause.

STAPES, in anatomy, a little bone situate in a cavity of the fenestra ovalis; thus called from its resembling a stirrup.

STAPLE, primarily signifies a public place or market, whither merchants, &c. are obliged to bring their goods to be bought by the people: as the Greve, or the places along the Seine, for the wines and corns of Paris; whither the merchants of other parts are obliged to bring those commodities.

STAPLE also signifies a city or town where merchants jointly agree to carry certain commodities, as wool, cloth, lead, tin, &c. in order to their being commodiously sold by the great. In England, staples are settled and appointed to be constantly kept at York, Lincoln, Newcastle upon Tyne, Norwich, Westminster, Canterbury, Chichester, Winchester, Exeter, and Bristol, to which places merchants and traders were to carry goods to sell in those parts. The staple commodities of England are chiefly wool, leather, cloth, tin, lead, &c. though by staple goods is now meant any proper saleable commodities not easily subject to perish.

STAR, *Stella*, in astronomy, a general name for all the heavenly bodies, which, like so many brilliant studs, are dispersed throughout the whole heavens. The stars are distinguished, from the phenomena of their motion, &c. into fixed, and erratic, or wandering stars: these last are again distinguished into the greater luminaries, viz. the sun and moon; the planets, or wandering stars, properly so called; and the comets. As to the fixed stars, or simply stars, they are so called because they seem to be fixed, or perfectly at rest, and consequently appear always at the same distance from each other.

Distribution and Number of the fixed STARS. An observer will first divide these stars into several classes, according to the splendor of their light; the brightest he will call stars of the first magnitude; those of the next inferior light he will call stars of the second magnitude; and so in order to those which can barely be seen by the naked eye, which are called stars of the sixth magnitude; and those which cannot be seen but by the help of magnifying glasses, are of the seventh, eighth, &c. magnitudes. Afterwards, to avoid confusion, and to be able to point out any one star, without being obliged

obliged to give a particular name to each; he will divide them into separate parcels of which he will make a particular plan; and to each of these constellations, or parcels of stars, he will assign a figure at pleasure, as that of a ram, a bull, a dragon, a Hercules, &c. but so that all the stars in each of the parcels, drawn in the plan, may be inclosed in the designed figures, and correspond to the different parts from whence they take their name: for example, having drawn the figure of a bull about a parcel, or constellation of stars, that star which falls in the eye will be called the star in the bull's eye, or simply the bull's eye; another, which respects the tip of one horn, will be named the bull's horn; and so of others. A parcel of stars thus contained in any assigned figure, is called a constellation.

By this means, notwithstanding the seeming impossibility of numbering the fixed stars, their relative situations one to another have been so carefully observed by astronomers, that they have not only been able to number them, but even to distinguish the place of each star in the heavens, and that with greater accuracy than any geographer could ever point out the situations of the several cities or towns upon the surface of the earth; and not only the places of those few, if they may be so called, which are to be seen with the naked eye, have been pointed out and registered by them, but even of those which are discovered only by the telescope. The largest and most complete catalogue of stars ever yet published, is that of our accurate astronomer Mr. Flamsteed, in his *Celestial History*, which contains near 3000 stars; all whose places are more exactly determined in the heavens, than the position of cities and other places on the earth.

We ought not, however, to imagine that all the fixed stars are thus numbered, and reduced to their respective places in the heavens; since their number continually increases, according to the goodness of the telescope, appearing millions beyond millions, till by their immense distance, they evade the sight, even though assisted by the best instruments. The telescopic stars with which Mr. Flamsteed has enriched his catalogue, are only the more remarkable ones, whose longitudes and latitudes, or situations in the heavens, it was thought worth while to register and put down. Dr. Hook, with a telescope of twelve feet, saw 78 stars among the Pleiades; and with a

longer telescope still more; and, in the single constellation of Orion, which, in Mr. Flamsteed's catalogue, has but 80 stars, there have been seen 2000. We may, therefore, venture to pronounce the number of fixed stars, including the telescopic ones as well as those visible to the naked eye, to be infinitely great, far beyond what is possible for the best astronomers to calculate, much less to reduce to order. But though the stars are certainly innumerable, yet those visible to the naked eye, in one hemisphere, seldom exceed a thousand; which, perhaps, may appear strange, since, at first sight, their number seems immensely great; but this is only a deception of sight, arising from a confused and transient view; for let a person single out a small portion of the heavens, and after some attention to the situation of the more remarkable stars therein, begin to count, he will soon be surprised to find how few there are therein. However, even the number of stars visible to the naked eye, small as it is in comparison with that of the telescopic ones, is far from being constant; since, besides that the different states of the atmosphere renders many of the lesser stars invisible, some stars have been observed to appear and disappear by turns; particularly one in the chair Cassiopeia, in the year 1572, which, for some time, outshone the largest of the fixed stars, and in sixteen months time, by degrees, vanished quite away, and was never seen since: in the year 1640, the scholars of Kepler saw a star in the right leg of Serpentarius, which likewise gradually disappeared: Fabricius, in the year 1596, gives the first account of the *stella mira*, or wonderful star, in the neck of the Whale; which has been since found to appear and disappear periodically, its period being seven revolutions in six years, but is never quite extinguished. Several other new stars have been observed; as one by Hevelius, in 1670; and another by Mr. Kirch, in 1689. These new stars are generally observed in the galaxy, or milky way.

Apparent Motions of the Fixed STARS.
See *Aberration*.

Falling STARS, in meteorology, fiery meteors, which dart through the sky in form of a star; being occasioned by a nitro-sulphureous matter, the common cause of all such meteors.

STAR, in heraldry, a charge frequently borne on the shield, and the honourable ordinaries, in figure of a star; which

differs

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differs only from the mullet, in not being pierced as this last is.

STAR, a badge of honour, worn by the knights of the garter, bath, and thistle.

STAR, in pyrotechny, a composition of combustible matters, which, being thrown aloft in the air, exhibits the appearance of a real star.

Stars are chiefly used as appendages to rockets, a number of them being usually inclosed in a conical cap or cover, at the head of the rocket, and carried up with it to its utmost altitude, where the stars, taking fire, are spread around, and exhibit an agreeable spectacle.

To make stars, mix three pounds of salt-petre, eleven ounces of sulphur, one of antimony, and three of gun-powder dust: or twelve ounces of sulphur, six of salt-petre, five and a half of gunpowder dust, four ounces of oilbanum, one of mastic, camphire, sublimate of mercury, and half a one of antimony and orpiment. Moisten the mass with gum water, and make it into little balls of the size of a chestnut, which dry either in the sun or the oven. These, set on fire in the air, will represent stars.

STAR-CHAMBER, a chamber at Westminster, so called from having its roof painted with gilt stars. The court of Star-chamber, which was an infamous one, was instituted in 1487, and abolished in 1541.

STAR-FISH, in zoology, a genus of naked insects, in the form of a radiated star, the mouth is situated in the centre, on the under part, and the anus in the centre, on the upper part; the tentacula are extremely numerous, and in a manner cover, either the whole upper surface of the body, or the extremities of the ramifications. The species of this genus, being very numerous, are distinguished according to the number of their rays; they are also of different sizes; the largest or great Magellanic star-fish, forming a circle of three feet in diameter, when its rays are fully extended, others not exceeding an inch in diameter.

STAR-STONE, in natural history, a name given to certain extraneous fossil stones, in the form of short, and frequently somewhat crooked, columns, composed of several joints; each resembling the figure of a radiated star, with a greater or smaller number of rays in the different species: they are usually found of about an inch in length, and of the thickness of a goose quill. Some of them

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have five angles, or rays, and others only four; and in some the angles are equidistant, while in others they are irregularly so; in some also they are short and blunt, while in others they are long, narrow, and pointed; and some have their angles so very short and obtuse, that at first sight they might be taken for entrochoasteria. The several joints in the same specimen are usually all of the same thickness; this however is not always the case, but in some they are larger at one end, and in others at the middle, than in any other part of the body; and some species have one of the rays bifid, so as to emulate the appearance of a six-rayed kind.

STARCH, a fecula or sediment, found at the bottom of vessels wherein wheat has been steeped in water; of which fecula, after the bran is separated from it, by passing through sieves, they form a kind of loaves, which being dried in the sun, or an oven, is afterwards broke in little pieces, and so sold.

STATES, or **ESTATES**, a term applied to several orders or classes of people assembled to consult of matters for the public good. Thus states-general, is the name of an assembly consisting of the deputies of the Seven United Provinces.

States of Holland are an assembly consisting of the deputies of the council, or colleges of each city, wherein resides the sovereignty of that province.

STATICS, that branch of mathematics which considers the motion of bodies arising from gravity. See *Motion*.

Statics then is the doctrine, or theory of motion, considered merely as arising from the weight of bodies; in which sense it is distinguished from mechanics, which is the application of statics to machines, engines, &c. though it must be owned, that statics and mechanics are frequently confounded.

STATICS, in medicine, a kind of epileptics, or persons seized with an epileptic fit; during which they contemplate some strong and lively idea, whereby they are distinguished from cataleptics, or persons seized with a catalepsy.

STATION, in geometry, surveying &c. a place pitched upon to make an observation, take an angle, or the like.

STATIONARY, in astronomy, signifies the appearance of a planet, when it seems to remain immovable on the same point of the zodiac for several days.

STATIONARY-DAYS, in church history, an appellation given to the weekly

fast-days, viz. Wednesdays and Fridays; otherwise called half-fasts, and fasts of the fourth and sixth days of the week. These fasts are certainly as ancient as Clemens Alexandrinus and Tertullian, who both mention them; and the reason of their institution is, because on the fourth day of the week the Jews took council to put our Saviour to death, which was actually accomplished on the sixth: however, being in continual use throughout the year, they were not kept with such rigour and strictness as Lent.

STATUARY, a branch of sculpture, employed in the making of statues. Statuary is one of those arts wherein the ancients surpassed the moderns; and indeed it was much more popular, and more cultivated among the former than the latter. It is disputed between statuary and painting, which of the two is the most difficult and the most artful. Statuary is also used for the artificer who makes statues. Phidias was the greatest statuary among the ancients, and Michael Angelo among the moderns.

STATUE, is defined to be a piece of sculpture in full relievo, representing a human figure. Daviler more scientifically defines statue a representation, in high relievo and insulate, of some person distinguished by his birth, merit, or great actions, placed as an ornament in a fine building, or exposed in a public place, to preserve the memory of his worth. In strictness, the term statue is only applied to figures on foot, the word being formed from *statua*, the size of the body. Statues are formed with the chissel of several matters, as stone, marble, plaster, &c. They are also cast of various kinds of metal, particularly gold, silver, brass, and lead. For the method of casting statues, see *Casting*.

Statues are usually distinguished into four general kinds: the first are those less than the life, of which kind we have several statues of great men, of kings, and of gods themselves; the second are those equal to the life, in which manner it was that the ancients, at the public expence, used to make statues of persons eminent for virtue, learning, or the services they had done: the third, those that exceed the life, among which, those which surpassed the life once and a half, were for kings and emperors, and those double the life, for heroes; the fourth kind were those that exceeded the life twice, thrice, and even more, and were called colossuses. Every statue resembling the person it is intended

to represent, is called *statua iconica*. Statues acquire various other denominations:

1. Thus allegorical statue, is that which under a human figure, or other symbol, represents something of another kind, as a part of the earth, a season, age, element, temperament, hour, &c. 2. Curule statues, are those which are represented in chariots drawn by bigæ, or quadrigæ, that is, by two, or four horses: of which kind there were several in the circuses, hippodromes, &c. or in cars, as we see some with triumphal arches, on antique medals. 3. Equestrian statue, that which represents some illustrious person on horse-back, as that famous one of Marcus Aurelius, at Rome: that of king Charles the First, at Charing-cross; King George the Second, in Leicester-Square, &c. 4. Greek statue denotes a figure that is naked and antique; it being in this manner the Greeks represented their deities, athletes of the Olympe games, and heroes: the statues of heroes were particularly called Achillean statues, by reason of the great number of figures of that prince in most of the cities of Greece. 5. Hydraulic statue, is any figure placed as an ornament of a fountain or grotto, or that does the office of a jet d'eau, a cock, spout, or the like, by any of its parts, or by any attribute it holds; the like is to be understood of any animal serving for the same use. 6. Pedestrian statue, a statue standing on foot; as that of king Charles the Second, in the Royal-Exchange; and of King James the Second, in Privy-Gardens. 7. Roman statue, is an appellation given to such as are clothed, and which receive various names from their various dresses. In repairing a statue cast in a mould, they touch it up with a chissel, graver, or other instrument, to finish the places which have not come well off: they also clear off the barb, and what is redundant in the joints and projectures.

STATURE, the size or height of a man.—From the Latin *statura*, or *stare*, to stand. The stature, or pitch of a man, is found admirably well adapted to the circumstances of his existence. Had man, observes Dr. Grew, been a dwarf, he could scarce have been a reasonable creature: for, to that end, he must have had a jolt head; and then he would not have had body and blood to supply his brain with spirits; or, if a small proportional head, there would not have been brain enough for his business.—Again, had man been a giant, he could not have been so commodiously supplied with food;

food; for there would not have been flesh enough of the best eatable beasts to supply his turn; or, if the beasts had been made proportionally bigger, there would not have been grass enough, &c. It is a common opinion, however, and has been so ever since Homer's time, that people, in the earliest ages of the world, much surpassed the moderns in stature; and it is true, we read of men, both in sacred and profane history, whose pitch appears surprising: but then it is true, that they were esteemed giants.

The ordinary stature of men, Mr. Derham observes, is, in all probability, the same now, as at the beginning; as may be gathered from the monuments, mummies, &c. still remaining. The oldest monument in the world is that of Cheops in the first pyramid of Egypt, which Mr. Greaves observes, scarce exceeds the measure of our ordinary coffins. The cavity, he says, is only 6,488 feet long, 2,118 feet wide, and 2,160 deep: from which dimensions, and those of several embalmed bodies, taken by him in Egypt, that accurate writer concludes, there is no decay in nature; but that the men of this age are of the same stature as those three thousand years ago.

To these we have other and later instances to add from Hakewell: the tombs at Pisa, which are some thousands of years old, are no longer than ours. The same may be said of Athelstan's in Malmesbury church; Sebba's in Paul's, of the year 693, &c. The like evidence we have from the ancient armour, shields, vessels, &c. dug up at this day: for instance, the brass helmet dug up at Metaurum, fits one of our men; yet it is allowed to have been left there at the overthrow of Asdrubal. Add, that Augustus was five feet nine inches, which was the measure of our queen Elizabeth; only the queen exceeded the emperor by two inches, allowance being made for the difference between the Roman and our foot.

STAVERS, or STAGGERS, among the farriers, a giddiness in the horse's head, which ends in madness.

STEEL, a kind of iron refined and purified by the fire with other ingredients, which renders it whiter, and its grain closer and finer than common iron. Steel, of all other metals, is that susceptible of the greatest degree of hardness, when well tempered; whence its great use in the making of tools and instruments of all kinds. The manner of making iron into steel had remained

very long a secret; but many authors of late date have given the process, though it does not appear the same in all, and an many is encumbered with circumstances intended only to disguise it.

Mr. Cramer observes, that the method of making steel out of iron, is either by fusion, or by cementation. That by cementation may be performed in the following manner: chuse some bars of pure iron, not too thick; prepare a cement of charcoal dust, moderately pulverised, one part, and wood-ashes half a part; or of charcoal dust two parts, bones, horns, leather, or hair of animals, burnt to a blackness in a close vessel, and in a gentle fire, and afterwards reduced to a powder, one part, wood ashes half a part; mix them together. Prepare a cylindrical earthen vessel, two or three inches higher than the bars are long; put into the bottom of this vessel the cement, prepared as before directed, so that, being gently pressed down, it may cover the bottom of the vessel an inch and a half deep; place then the iron bars perpendicularly, so that they may be every where an inch distant from the sides of the vessels, and from each other; fill the interstices with the cement, and cover the bars with it, that the vessel may be quite full; cover it with a tile, and stop the joints with a lute; put this vessel into a furnace, and keep it moderately, but equally red-hot, for six or ten hours. When this is over, take the red-hot bars out, and dip them in cold water; they will then be brittle, and turned to steel.

The method of making steel by fusion is this: take of iron ore, or of unmallicable iron of the first fusion; divide it into small parcels, and put them into a bed made of charcoal dust in a smith's forge; let the quantity of the iron be but small for the experiment; put to it, as a defensive menstruum, some of the vitrescent scorix of sand, or stones of the same nature; then put upon them a quantity of charcoal; light this, and admit only a small blast of the bellows, that the scorix and metal may both melt regularly; when this has been some time kept in fusion, take it out, divide it into two parts, which make red-hot, and hammer into long bars; finally, heat them red-hot, and plunge them into cold water, and they will then be found to be steel, so very hard, as not to be filable; and so brittle, as to break asunder, when struck with a considerable force. *Cramer's Art of Assaying.*

Mr. Lemery shews a simple method of reducing steel to a very fine powder, without rusting it: pour water on filings of steel in an earthen vessel, till it is four inches above the filings; stir it well every day, supplying more water, as that in the vessel subsides, so that the steel is always covered; continue this operation till the steel falls into an impalpable black powder; then dry it for use. *Mem. de l' Acad. des Scienc. 1736.*

Mr. Boyle tells us of his having opened the body of steel, by a highly rectified spirit of urine made per se, and poured upon new filings of the steel. This being put into a warm place, the menstruum dissolved a considerable part of the metal. *Mem. de l' Acad. des Sciences, 1736.*

Annealing of STEEL, is by some used for the softening it, in order to make it work easier; which is usually done by giving it a blood red heat in the fire, and then taking it out, and letting it cool of itself.

Steel may indeed be made a little softer than in the common way, by covering it with a coarse powder of cow-horn, or hoofs; thus inclosing it in a loam, heating the whole in a wood fire till it be red-hot, and then leaving the fire to go out of itself, and then the steel to cool. *Max. Machan. Exercises.*

* **STEELE**, Sir RICHARD, a celebrated writer, was born at Dublin of English parents, and leaving Ireland while he was young, was educated at the Charter-house school in London. In 1695, he wrote the Procession, a Poem on the funeral of queen Mary. He for some time rode privately in the guards, and was afterwards raised to the rank of ensign; when, being drawn into many irregularities, he wrote the Christian Hero, principally to fix upon his own mind a strong impression of virtue and religion. He afterwards obtained a captain's commission in the lord Lucas's regiment of fusiliers, by the interest of the lord Cutts, to whom he dedicated his Christian Hero, who also appointed him his secretary. The above religious piece injuring his reputation among his gay companions, he endeavoured to enliven his character by writing that excellent comedy, the Funeral. Afterwards he was introduced by Mr. Addison, into the acquaintance of the earls of Halifax and Sunderland, by whose interest he was appointed gazetter, soon after which he wrote the Tender Husband and the Lying Lovers. On the 12th of April, 1709, he began the Tatler, which greatly increasing his reputation and interest, he was preferred to be one of the

commissioners of the stamp-office; and, the Tatler being dropped, he, in concert with Mr. Addison, set up the Spectator, the first number of which was published on Thursday the first of March, 1711, and after that the Guardian, in 1713; and the same year he published a Paper intitled the Englishman. Mr. Steele intending to serve in the last parliament of queen Anne, resigned his place of commissioner of the stamp-office, in June 1713, and was chosen member of the house of commons for the borough of Stockbridge, but did not sit long in that house before he was expelled for writing the close of the paper called the Englishman, and one of his political pieces intitled the Crisis. Soon after the accession of George I. to the throne, Mr. Steele was appointed surveyor of the royal stables at Hampton-Court, governor of the royal company of comedians, and put into the commission of the peace for the county of Middlesex; and, in 1715, received the honour of knighthood. In the first parliament of that king, he was chosen member for Boroughbridge in Yorkshire, and after the suppression of the rebellion in the North, was appointed one of the commissioners of the forfeited estates in Scotland. In 1722, his excellent comedy, called the Conscious Lovers, was acted with great success at the Theatre-Royal Drury-Lane, and Sir Richard dedicating it to the king, his majesty made him a present of 500l. Some years before his death he grew paralytic, and retired to his seat at Llangunnor, near Caermarthen, in Wales, where he died the first of September, 1729, and was privately interred in Caermarthen church.

STEELING, in cutlery, the laying on a piece of steel upon a larger mass of iron, to make that part which is to receive the edge harder than the rest. The body of an axe may very well be of iron, as it never comes in use to cut with; and perhaps is stronger, and less liable to break than if of steel: but it must have a quantity of steel at that part where the edge is to be made.

STEEL-GLASSES, a name given by some authors to the metalline spheres used in optics. These, according to Cardan, are made of three parts of brass, one part of tin, and one of silver, with an eighteenth part of antimony; but most either totally leave out the silver, or add only a twenty-fourth part, to save the expence. There are many other methods directed by several authors, but most use arsenic

and tartar mixed with the metals. These are afterwards to be polished with emery, rotten-stone, putty, and the like.

STEELYARD, in mechanics, a kind of ballance by means of which the gravity of different bodies is found by the use of one single weight. See *Ballance*.

STEEPLE, an appendage erected generally on the western end of a church, to hold the bells. Steeples are denominated from their form, either spires or towers; the first are such as ascend continually diminishing either conically or pyramidally. The latter are more parallelopipedes, and are covered at the top platform-like. In each kind there is usually a sort of windows or apertures to let out the sound, and so contrived at the same time, as to drive it down.

STEGANOGRAPHY, the art of secret writing, or of writing in cyphers, known only to the persons corresponding.

STENOITICS, in medicine, remedies proper to close and stop the orifices of the vessels, or emunctories, when relaxed, stretched, lacerated, &c.

STELLATE, among botanists, expresses leaves which grow not less than six at a joint, and are arranged like the rays of a star.

STEM, in botany, that part of a plant arising out of the root, and which sustains the leaves, flowers, fruits, &c.

STENONIAN DUCT, in anatomy, a name given from Steno, its discoverer, to one of the superior salival ducts, running from each of the parotids, about three fingers long, and of the thickness of a wheat straw, having a great number of roots. This duct passes over the masseter muscle through the middle of the cheek, and there perforates the buccinator muscle, and the membrane of the mouth near the second or third molares, and at this perforation it discharges a very large quantity of its proper fluid into the mouth.

* **STEPHEN**, king of England, was the son of Stephen earl of Blois, by Adela, the daughter of William the Conqueror, and succeeded his uncle Henry I. The 22d of December, 1135, in the thirty-first year of his age, though the empress Maud, the daughter of Henry I. was then living. He endeavoured to strengthen himself against her, by taking a foreign army into pay; and by signing a charter, in which he acknowledged his being elected king by the clergy and people: he also confirmed the rights of the church; abolished the forest laws, and revived the favourite laws of Edward the Confessor;

but not being able to reward the nobles according to their expectations, a war was soon raised against him; the Welsh made an irruption in the West, while David king of Scotland ravaged the northern counties; but having concluded a disadvantageous peace with them, he fell ill of a lethargy, when the Normans imagining that he was dead, invited Theobald, his elder brother, to seize that duchy; however, Stephen recovering, went over into Normandy, expelled his brother, and then returned to England, where the friends of Maud were ready to declare in her favour, assisted by the king of Scotland; but after the Scots had ravaged Northumberland, and the barons had fortified themselves in the southern counties, Stephen reduced the castles of the latter, invaded Scotland, and compelled king David to conclude another peace with him. He now wore the crown with great tranquillity for some time; but being jealous of the power of the clergy, he seized the castles belonging to the bishops of Salisbury, Lincoln, and Ely; upon which the bishop of Winchester, legate of England, and the king's own brother, became his most inveterate enemy. The clergy, who wanted not only castles, but garrisons, now made their ambition the cause of the people, and the empress Maud took this opportunity of personally asserting her right to the throne. The bowels of England were now torn by all the rage of civil war, while the people were plundered by both parties. The king faced the storm with a noble fortitude; he besieged the empress in Wallingford, pursued her to Lincoln, and gave battle to the earl of Gloucester before that city, when after a great effusion of blood the earl was victorious; and the king having broke his battle-ax and sword in pieces by the force of his blows, was knocked down on his knees with a stone before he could be taken, after which he was confined in Bristol castle, and ignominiously loaded with irons. While Stephen was in prison, his brother the legate excommunicated his adherents; the duke of Anjou seized upon Normandy, and Maud was every where acknowledged queen; but she behaving with great haughtiness, and refusing to mitigate the severity of the Norman laws, a revolt ensued, and Maud was obliged to quit London. The legate, whom she had disobliged, now turning sides again, excommunicated her party, and Stephen being set at liberty, was every where successful, till the empress and her son Henry were

were obliged to retire to Normandy. That young prince soon after landed an army in England in order to obtain the crown, but in 1153 Stephen concluded a peace with him, and upon condition of enjoying the crown during his life, consented that Henry should succeed to it at his death. Stephen, who was remarkable for his valour, clemency, and generosity, died the 25th of October, 1154, in the fiftieth year of his age, and the nineteenth of his reign. He was succeeded by Henry II.

STEPHEN, or **St. STEPHEN'S-DAY**, a festival of the Christian church, observed on the 26th of December, in memory of the first martyr St. Stephen.

STEREOGRAPHIC PROJECTION, the projection of the circles of the sphere on the plane of some one great circle, the eye being placed in the pole of that circle. The method and practice of this projection in all the principal places, viz. on the planes of the meridian, equinoctial, and horizon, have already been given under the articles *Map* and *Projection*.

STEREOGRAPHY, the art of drawing the forms and figures of the solids upon a plane.

STEREOMETRY, that part of geometry which teaches how to measure solid bodies, i. e. to find the solidity or solid content of bodies, as globes, cylinders, cubes, vessels, ships, &c.

STEREOTOMY, the art or act of cutting solids, or making sections thereof, as walls or other members in the profiles of architecture.

STERILITY, the quality of a thing that is barren, in opposition to fecundity.

STERLING, a term frequent in English commerce, a pound, shilling, or penny, of lawful money of England, as settled by public authority.

STERNOHYOIDÆUS, in anatomy, a pair of muscles arising from the upper and internal part of the bone of the sternum.

STERNUM, in anatomy, the breast-bone.

STERNUTATIVE, or **STERNUTATORY**, a medicine proper to produce sneezing.

STEW, a small kind of fish-pond, the peculiar office of which is to maintain fish, and keep them in readiness for the daily uses of a family.

STEWs, or **STUes**, places anciently permitted in England to women of prostituted incontinency for the business of

prostitution. They were under particular rules and laws of discipline, appointed by the lord of the manor.

STEWARD, an officer appointed in another's stead, and always taken for a principal officer within his jurisdiction. Of these there are various kinds. The greatest officer under the crown is the lord high steward of England, an office that was anciently hereditary and permanent in the families of the dukes of Lancaster, till the time of Henry IV. But the power of this officer is so very great, that it has not been judged safe to trust it any longer in the hands of a subject, excepting only *pro hac vice*, occasionally: as to officiate at a coronation, at the arraignment of a nobleman for high treason, or the like. During his office, the steward bears a white staff in his hand, and the trial, &c. ended, he breaks the staff, and with it his commission expires. There is likewise a lord steward of the king's household, who is the chief officer of the king's court, has the care of the king's house, and authority over all the officers and servants of the household, except such as belong to the chapel, chamber, and stable. There is also a steward of the Marshalsea, who has judicial authority. And in most corporations, and all houses of quality in the kingdom, there is an officer of the name and authority of a steward.

The steward of a ship is he who receives all the victuals from the parker, and is to see it well stowed in the hold; all things of that nature belonging to the ship's use are in his custody; he looks after the bread, and distributes out the several measures of victuals in the ship; he hath an apartment for himself in the hold, which is called the steward's room.

STIGMATA, in natural history, the apertures in different parts of the bodies of insects, communicating with the tracheæ, or air vessels, and serving for the office of respiration.

STIGMATA, in antiquity, certain marks impressed on the left shoulders of the soldiers when listed.

STIL de Grain, in the colour trade, the name of a composition used for painting in oil or water, and is made by a decoction of the lycium or Avignon berry in allum-water, which is mixed with whiting into a paste, and formed into twisted sticks. It ought to be chosen of a fine gold-yellow, very fine, tender and friable, and free from dirt.

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STILES, in carpentry, the upright pieces which go from the bottom to the top of any wainscot, or the like.

STILLATITIOUS Oils, such as are produced by distillation, in opposition to those got by infusion, expression, &c.

STILL-BOTTOMS, in the distillery, a name given by the traders to what remains in the still after the working the wash into low wines. These bottoms are procured in the greatest quantity from the malt-wash, and are of so much value to the distiller, in the fattening of hogs, &c. that he often finds them one of the most valuable articles of the business. The liquor left behind in the still, after the rectifying the low wines into proof-spirit, is also called by some by the name of still bottoms; but this is little more than mere phlegm, or water impregnated with a few acid and oily parts, not worth separating, unless for curiosity. The liquor left in the still, after the rectifying the proof-spirit into alcohol, is also of the same kind.

STILL-HOUSE. The Dutch have much the advantage of us in the structure of their still-houses. The general rules in building those houses, according to Shaw, should be such as follow. The first caution is, to lay the floor asloope, not flat, where any wet work is to be performed. It should also be well flagged, with broad stones, so that no wet be detained in the crevices, but all may run off, and be let out at the drains made at the bottom and sides. The stills should be placed abreast on that side of the still-house to which the floor has its current. Fronting the stills, and adjoining to the back of the wall should be a stage for holding the fermenting backs, and these being placed at a proper height, may empty themselves by means of a cock and a canal into the stills, which are thus charged with very little trouble. Near this set of fermenting backs should be placed a pump or two, that may readily supply them with water, by means of a trunk, or canal, leading to each back; under the pavement, adjoining to the stills, should be a kind of cellar, wherein to lodge the receivers, each of which should be furnished with its pump, to raise the low wines into the still for rectification; and through this cellar the refuse wash, or still bottoms, should be discharged by means of a hose, or other contrivance.

STIMULATING, a property in angular or sharp bodies, whereby they vel-

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licate and cause vibrations and inflections of the fibres of the nerves, and a greater derivation of nervous fluid into the parts affected. Stimulants produce pain, heat, redness, &c. They may be reduced to violent penetrating depilatories, gentle sinapisms, vesicatories, and caustics.

STING, an apparatus in the body of certain insects, in the form of a little spear, serving them as a weapon of offence. The sting of a bee or wasp, is a curious piece of mechanism; it consists of a hollow tube, at the root whereof there is a bag full of sharp, penetrating juice, which in stinging, is injected into the flesh, through the tube; within the tube, Mr. Durham has observed, there lie two sharp small bearded spears: in the sting of a wasp, he told eight beards on the side of each spear, somewhat like the beards of fish-hooks. One of these spears in the sting, or sheath, lies with its point a little before the other, to be ready, as should seem, to be first darted into the flesh, which once fixed by means of its foremost beard, the other then strikes too, and so they alternately pierce deeper and deeper, their beards taking more and more hold in the flesh; after which the sheath or sting follows to convey the poison into the wound, which that it may pierce the better, is drawn into a point, with a small slit below that point for the two spears to come out at. By means of these beards it is, that the animal is forced to leave its sting behind it, when disturbed, because it can have no time to withdraw the spears into the scabbard.

STINK, or **STENCH**, a disagreeable smell exhaling from a corrupted, or other body, and which is prejudicial to the nose and brain. A stinking breath is usually the result either of diseased lungs, or else of scorbutic gums, &c. A stinking nose is the result of a deep ulcer within the nose, whence arise fetid scales, &c.

STIPEND, among the Romans, signified the same with tribute; and hence stipendiarii were the same with tributarii.

STIPULATION, in the civil law, the act of stipulating, that is, of treating and concluding terms and conditions to be inserted in a contract.

STOCKING, that part of the cloathing of the leg and foot which immediately covers their nudity, and screens them from the cold. Anciently, the only stockings in use were made of cloth or milled stuff sewed together; but since the invention of knitting and weaving stockings of silk, wool, cotton, thread, &c. the use

of cloth stockings is quite laid aside. The modern stockings, whether wove or knit, are a kind of plexus's formed of an infinite number of little knots, called stitches, loops, or masses, intermingled in one another. Knit stockings are wrought with needles made of polished iron or brass wire, which interweave the threads and form the masses the stocking consists of. This operation is called knitting, the invention of which is commonly attributed to the Scots, on this ground, that the first works of this kind came from thence. It is added, that it was on this account that the company of stocking-knitters established at Paris, in 1527, took for their patron St. Elacre, who is said to be the son of a king of Scotland. Woven stockings are ordinarily very fine; they are manufactured on a frame, or machine of polished iron.

The English and French have greatly contested the honour of the invention of the stocking-loom; but we are assured, whatever pretensions the French claim to this invention, that the same was certainly devised by William Lee, of St. John's college, Cambridge, in the year 1589, though it is true, that he first made it public in France, after despairing of success in his own country.

* STOCKHOLM, the capital city of Sweden, with a good harbour, citadel, also a castle, where the king resides. It is a handsome large place, and all the houses in the town, and part of the suburbs, are well built with stone, and are four or five stories high. The suburbs are built of wood, and the houses are painted red. They have lately built a handsome palace for the king, and there are several handsome and large churches. It is divided into six wards, to which may be added the two suburbs; near one of these is a hill, called Brunckberg, on the top of it is a tower and a bell, which they ring in case of fire. The lake Meller, which lies to the west, supplies the inhabitants with good water. Some hundreds of houses were burnt in one of the suburbs in 1723. The arsenal is very famous, and the harbour is so large that it will hold a thousand vessels, but there is this inconvenience, that when ships come from the north, they are obliged to go sixty miles round among the rocks before they can get to the harbour. There is here an academy of sciences, and another of painting and sculpture. Stockholm stands upon six small islands, joined together by wooden bridges, and the inha-

bitants are said to be about thirty thousand in number. It is two hundred miles north-east of Copenhagen, and seven hundred north-east of London. Long. 19. 30. Lat. 59. 69. N.

STOICS, a sect of ancient philosophers, the followers of Zeno, thus called from the Greek which signifies a porch or portico, Zeno being used to teach under a portico or piazza. It was the common fault of the Stoics to introduce abundance of subtilty and dryness into their disputations, either by word of mouth, or in writing. They seemed as carefully to avoid all beauty of stile, as depravity of morals. Chrylippus, who was one of the Stoics, did no great honour to his sect, and could only disgrace it. He believed the gods perishable, and maintained, that they would actually perish in the general conflagration. He allowed the most notorious and most abominable incests, and admitted the community of wives amongst sages. To the praise of the Stoics in general, it must, however, be confessed, that, less intent than other philosophers upon frivolous, and often dangerous speculations, they devoted their studies to the clearing up of those great principles of morality which are the firmest supports of society; but the dryness and stiffness that prevailed in their writings, as well as in their manners, disgusted most of their readers, and abundantly lessened their utility. Zeno's chief followers, among the Greeks, were Lucippus, Cleanthus, Chrylippus, Diogenes Babylonius, Antipater, Panætius, Posidonijs, and Epictetus. Among the Romans, Cato, Varro, Cicero, Seneca, the emperor Antoninus, &c.

As for the morality of the Stoics, it was couched much in paradoxes; as that a wise man is void of all passions, or perturbation of mind; that pain is no real evil, but that a wise man is happy in the midst of torture, is always the same, and is always joyful; that there is none else free; that none else ought to be esteemed king, magistrate, poet, or philosopher; that all wise men are great men; that they are the only friends or lovers; that nothing can happen to them beyond their expectations; that all virtues are insensibly connected together; that all good things are equal, and equally to be desired; that goodness admits of no increase or diminution. They own but one God, whom they, however, call by various names, as Fate, Jupiter, &c. by which they

they did not mean various things, but various powers and relations of the same thing. Providence they expressed under the name Fate. They held the immortality of the soul.

* **STOKE, battle at.** In consequence of the battle at Bosworth, the duke of Richmond ascended the throne of England, by the name of Henry VII. who being of the Lancastrian family, hated the Yorkists, to which party he soon rendered himself odious, partly by his coldness to his wife; but chiefly by his confinement to the Earl of Warwick, the only male heir of the house of York, in the tower of London. In the year 1486, some malicious zealots of the York party, willing to encrease the people's dislike to their king, spread a report that he intended to put to death the earl of Warwick, and insinuated that they had only changed one tyrant for another. The credulity of the people on this false report gave occasion to a certain artful priest named Simon, to set up a counterfeit earl of Warwick, in order to excite a rebellion. His instrument for this purpose was one Lambert Simnel, a baker's son, whom he had trained up in his own house. The youth was about the earl's age, of good natural parts, and in all his behaviour had something grand, and above his birth. The earl was eleven years old at the death of Edward IV. in whose court he was brought up. Simnel therefore was taught to talk pertinently of that prince's court, and to relate many particulars concerning the lord and ladies that frequented it. From hence we may presume that the priest was himself instructed by persons well informed, and the plot suggested to him. Be this as it will, Simon, or those that employed him, not thinking proper to produce Simnel first in England, where he might be examined too closely, and by persons too knowing, judged it convenient that he should act his first scene in Ireland, where he met with surprising success. The Irish not doubting but he was the real earl of Warwick, escaped from the Tower; and having a great regard for the house of York, in a few days after the impostor's arrival, he was proclaimed in Dublin king of England, Ireland, &c. by the name of Edward VI. On advice of what had happened at Dublin, Henry took the earl of Warwick out of the Tower, caused him to go in solemn procession to St. Paul's, where multitudes were assembled to see him, and many

who had known him were allowed to talk with him freely; so that the publick was satisfied of his being the right earl of Warwick: nevertheless the Irish maintained that theirs was the true earl, and this at London an impossibility. It was not in Henry's dominions only that this imposture was countenanced, for the duchess of Burgundy, sister to Edward IV. became of the party, through the solicitations of the earl of Lincoln, nephew to Richard III. This earl obtained of the duchess an aid of two thousand veteran troops, which he embarked for Ireland, where Simnel's coronation was now performed with great solemnity. This done, Simnel and his friends, imagining they were in as good a condition for attacking Henry, as Henry himself was when he attacked Richard III. set sail for England, and landed near Lancaster, with about eight thousand men, in the year 1487, however, they were greatly deceived in their expectations of being joined by multitudes of the English; for the people in general gave them but a cold reception, and only Sir Thomas Broughton with a small force joined them. Mean time the king resolving to attack the invaders as soon as possible, gave them no time to strengthen themselves by an increase of their numbers, or by taking any fortified place, and with about eleven thousand men he quickly came up with the enemy as they were marching for Newark. The earl of Lincoln, who commanded the invaders, drew them up on the side of a hill, near a little village called Stoke, where Henry offered him battle. The king lost in some measure the advantage of his superior numbers, the ground obliging him to make but a narrow front line; however, this line was composed of his very best men, in number six thousand. To the great bravery of these troops Henry entirely owed his victory, for they only fought. The battle lasted three hours. The Burgundian veterans, who were Germans, being excellently disciplined, fought with great order, and inspired the Irish with courage. At length the earls of Lincoln and Kildare, and Swart the German general, with most of his men, being killed, the Irish were forced to run. About four thousand of the vanquished were slain, with half of the king's first line, from whence it is evident the battle was obstinately fought. Among the prisoners were the new king of Ireland, with the priest his tutor. The former, either

either out of generosity or policy, Henry honoured with the office of turnspit in his kitchen; in which he behaved so well, that he was soon after preferred to be the king's falconer, a post which he enjoyed to his death: as for the politic Simon, he was committed to prison, and heard of no more.

STOLE, a sacerdotal ornament wore by the Romish parish priests over their surplice, as a mark of superiority in their respective churches; and by other priests, over the alb, at celebrating of mass, in which case it goes across the stomach; and by deacons, over the left shoulder, scarf-wise; when the priest reads the Gospel for any one, he lays the bottom of his stole on his head.

Groom of the STOLE, the eldest gentleman of his majesty's bed-chamber, whose office and honour it is to present and put on his majesty's first garment, or shirt, every morning, and to order the things in the chamber.

Order of the STOLE, an order of knights instituted by the kings of Aragon. Another military order, at Venice, is called the order of the golden stole; thus called from a golden stole, which those knights wore over their shoulder, reaching to the knee, both before and behind, a palm and a half broad. None are raised to this order but patricians, or noble Venetians. It is uncertain when either of these orders was instituted.

STOMACH, *Ventriculus*, in anatomy, a hollow, membranous, organical part of an animal, destined to receive the food, after deglutition, and convert it into chyle. It lies immediately under the midriff, the liver covers a part of its right side, the spleen touches it on the left, and the colon at its bottom, to which also the cawl is tied. Its figure resembles a bag pipe, being long, large, wide, and pretty round at the bottom, but shorter and less convex on its upper part, where it has two orifices, one at each end, which are somewhat higher than the middle between them.

STOMACHICS, are such medicines as are serviceable to the stomach, promote digestion, &c. Stomachic corroboratives are such as strengthen the tone of the stomach and intestines, among which are carminatives, as the roots of galangals, red gentian, zedoary, pimpinella, calamus aromaticus, and arum. Of barks and rinds, those of canella alba, saffrafras, citrons, Seville and China

oranges, &c. Of spices, pepper, ginger, cloves, cinnamon, cardamums, and mace. Other things of this nature are, among simples, Roman and common chamæmile, wormwood, mint, carduus benedictus, and the four carminative feeds. Of preparations, the oil of cedar, oil of oranges by expression, oils of common chamæmile, daucus Creticus, anisum stellatum, cumin carraway, mint, and wormwood, with the spirit of salt and sweet nitre. Among compounds, are the sal volatile sylvii, the stomachic elixir, the essence of orange peel, with sweet spirit of nitre, tincture of tartar, oils of oranges prepared by expression, the compound essence of wormwood, &c.

STOMACHIC, is also applied to the arteries, veins, &c. of the stomach.

STOMACHUS, in anatomy, the same with the oesophagus, or gula.

STOMATIA, in natural history, a genus of simple shells, without any hinge, and formed of one piece; its figure is depressed and flat, its mouth the most patent of all the shells, the limpet only excepted; it has a short spiral turn running into the mouth, at the head; and has no perforations in any part of the surface. The animal inhabiting this shell is a nereis.

STONE, in natural history, a hard solid body, neither malleable, fusible by fire, nor soluble in water; formed by succession of time in the bowels of the earth. Mr. Tournefort supposes that stones vegetate; but M. Geoffroy accounts for the origin and formation of stones in a different manner. He lays it down as a principle, that all stones, without exception, have been fluid; or, at least, a soft paste, now dried and hardened.

On this principle he examines the formation of the different kinds of stones, and shews that the earth alone is sufficient for the same, independent of all salts, sulphurs, &c. Mr. Geoffroy conceives two kinds of primitive particles in the earth. Those of the first kind exceedingly fine, thin lamellæ, equal to each other, or nearly so. Now when these meet together, from any cause whatever, in a sufficient quantity, the regularity and equality of their figures determine them to range themselves equally and regularly; and thus to form a homogenous compound, which is very hard, from the immediate contact of the parts; and very transparent, by reason

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of their regular disposition, which leaves a free passage to the rays of the light every way; and this is called crystal. The parts of the second kind have all sorts of irregular figures, and must accordingly form assemblages that are much opaque, and less hard. Now crystal is formed wholly of parts of the first kind, and all other stones of a mixture of the two kinds of parts together; this mixture is absolutely necessary, in order to unite and bind together the parts of the second kind, and give them a hardness and consistence, without which they would only make a sand or dust. Water appears the fittest vehicle to carry the parts of the first kind. This is seen from several petrifying springs, which incrustate the pipes through which their waters are conveyed, or even solid bodies laid in them for some time. The water does not dissolve these earthy parts; it only keeps them in fusion, as it does the juices wherewith plants are nourished. This water, thus charged with earthy particles of the first kind, M. Geoffroy calls the stony, or crystalline juice, of which those bodies are primarily formed.

STONE, in medicine, a stony or terrestrial concretion in any of the urinary passages, which occasions a difficulty in making water, and a pain in the small of the back, or about the os pubis. When this collection is so large as to form one or more bodies, unable on account of their size to pass through the conduits of urine, they frequently cause great pain, ulcers in the parts, and an entire suppression of urine; and, from the part where this obstructing matter happens to lodge, this distemper receives its denomination, as from the kidneys, bladder, ureters, or urethra.

STONE also denotes a certain quantity or weight of some commodities. A stone of beef at London is the quantity of eight pounds; in Herefordshire twelve pounds; in the north sixteen pounds.

A stone of wool, according to the statute of 11 Henry VII. is to weigh fourteen pounds; yet in some places it is more, in others less; as in Gloucestershire fifteen pounds, in Herefordshire twelve pounds.

A stone among horse-couriers is the weight of fourteen pounds.

STONEHENGE, in antiquity, a famed pile or monument of huge stones in Salisbury plain, six miles distant from that city. It consists of the remains of four ranks of rough stones, ranged one

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within another, some of them, especially in the outermost and third rank, twenty feet high, and seven broad; sustaining others laid across their heads, and fastened by mortises: so that the whole must have anciently hung together. Antiquaries are now pretty well agreed that it was a British temple; and Dr. Langwith thinks it might easily be made probable, at least, it was dedicated to the sun and moon. Inigo Jones has given a fine scheme of the work, and strives hard to persuade the world that it was Roman: but Dr. Langwith, who took his measures on the spot, assures us he could by no means reconcile them with that scheme.

STONE BRASH, in agriculture, a light lean soil, full of larger and smaller masses of rubble stones.

STOOMING of Wine, the putting bags of herbs, or other ingredients into it. See *Wine*.

STOOPING, in falconry, is when a hawk being upon the wing, at the height of her pitch, bends down violently to take the fowl.

STOP, in the manege, is a pause, or discontinuance of a horse's motion.

STOPS, or POINTS, in grammar. See *Pointing and Punctuation*.

STORAX, or STYRAX, in the materia medica, an odoriferous resin exuding, in the warmer climates, from a middling sized tree, with leaves like those of the quince, flowers like those of the orange-tree, and fruit like filberds; a native of Asia, and, as it is said, of Italy. Two sorts of this resin have been commonly distinguished in the shops.

Liquid STORAX, a resinous juice, obtained from a large tree, with angular leaves like those of the maple, and a round fruit composed of a number of pointed seed-vessels, called by Ray *pyracis folio*, a native of Virginia and Mexico, and lately naturalized to our own climate. The juice called liquid amber is said to exude from incisions made in the trunk of this tree, and the liquid storax to be obtained by boiling the bark or branches in water. Two sorts of liquid storax are distinguished by authors; one, the purer part of the resinous matter that rises to the surface in the boiling, separated by a strainer, of the consistence of honey, tenacious like turpentine, of a reddish or ash-brown colour, of an acrid unctuous taste, and a fragrant smell, resembling that of the solid storax, but somewhat disagreeable: the other, the more

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more impure part, which remains on the strainer, in smell and taste much weaker, and containing a considerable proportion of the substance of the bark. What is most commonly met with under the name in the shops, is of a weak smell, and a grey colour, and is supposed to be an artificial composition.

STOVES, in gardening, buildings erected for the preservation of tender exotic plants, which will not live in these northern countries, without artificial warmth in winter. These are built in different methods, according to the ingenuity of the artist, or the different purposes for which they are intended.

STOVE, among confectioners, a little closet, well inclosed on all sides, wherein they dry their sweetmeats, ranged on several rows of shelves, made of wire.

STRABISMUS, squinting, in medicine and surgery, a distortion of the eyes, whereby their pupils are turned from, instead of being directed towards objects at which they look; sometimes only one eye, but more frequently both are thus affected. This disorder is frequently caused in infants, from letting them constantly suck at one and the same breast; or from placing them in the cradle, so as that they always look the same way towards the light or window; by which repeated action, the muscles on that side become too strong to be balanced by their opposite muscles; and hence the eye is contorted, or looks obliquely at objects. But it may be also owing to convulsive and epileptic motions, to which the eyes of infants are extremely subject. And, lastly, it may proceed, as well in adults as infants, from a spasm, or rigor, or from a palsy in some of the muscles of the eye; as also from a defect, or insensibility, of some part of the retina.

Squinting is a disorder very difficult to be cured, especially when in adults, and caused by some defect in the muscles, or retina: but, in young infants, it may probably be cured, says St. Yves, by frequently placing them before a looking-glass, that their eyes may be directed towards the image of their own face. Those more advanced in years may be assisted by reading very small writing or print; or by inspecting very minute objects, provided they turn their eyes even, and bathe them at times with Hungary water. Others propose to cure this disorder with a sort of malk, or eye-swath; but this method is seldom practicable, thro' the moroseness of infants, and other impediments.

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STRAIGHT, STREIGHT, or STRAIT, in hydrography, a narrow sea, or gut shut up between lands on either side, and affording a passage out of one great sea into another.

STRAIN, or SPRAIN, a violent extension of the sinews or tendons of some muscle.

STRANGUARY, in medicine, a partial suppression of urine; when it is total, it is called *ischuria*.

STRAPADO, or STAPPADO, a kind of military punishment, wherein the criminal is hoisted up by a rope, and let down; so that, by the weight of his body in the fall, his arms are dislocated.

* **STRASBURG**, a large, handsome, populous, and strong city of Germany, in Alsace. It contains about two hundred streets. It has a wooden bridge over the Rhine, which is thought to be one of the finest in Europe; as is likewise the cathedral church, whose tower is the handsomest in Germany, and the steeple is allowed to be the highest in Europe. It was a free and imperial city, but the king of France became master of it in 1681, and greatly augmented the fortifications, though before it had as many cannon as there are days in the year. The inhabitants were formerly protestants, and carried on a great trade; but most of them have been obliged to embrace the Romish religion. It is seated on the river Ill, which runs through it near the Rhine, and is fifty-five miles north of Basil, and two hundred and fifty-five east of Paris. Long. 7. 51. E. Lat. 34. 35. N.

STRATA, in natural history, the several bodies or layers of different matters of which the body of the earth is composed. The strata include all the layers of earths, minerals, metals, stones, &c. lying under the upper tegument or stratum, the turf, or mould.

STRATAGEM, a military wile; or a device in war for the surprising or deceiving the enemy.

STRATIFICATION, in chemistry, the ranging any thing to be calcined in several layers or strata one above another; which operation is denoted by the abbreviation S S S.

STRAWBERRY, *Fragaria*, in botany. The common strawberry is frequent in the woods of England, and is thence transplanted into gardens. The best season for this is in September, that the plants may be rooted before the frosts. They may also be transplanted in

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February; but then, if the spring should prove dry, they will require a great deal of watering to keep them alive. The proper soil for strawberries is a light hazely loam, not over rich; the ground must be well dug, and very carefully cleared of all noxious weeds; and, when it is levelled even, it should be marked out into beds about three feet and a half wide, leaving a path-way between each bed of two feet broad. In each of these beds should be planted four rows of plants, so that they may stand about a foot distance from each other in the rows, and they should be planted at about eight inches plant from plant in each. This is the proper distance for the wood strawberry, which is of the least growth of any; but the scarlet strawberry must be planted at a foot distance every way, and the haut-boy sixteen inches: and, finally, the large Chili strawberry, which is the largest grower of all, must be set at twenty-two inches distance, plant from plant. In the spring, when the strawberries begin to flower, if the season is dry, they must be very plentifully watered, and they must be kept very carefully cleared from weeds. At Michaelmas the beds should be dressed, the weeds all very carefully taken up, all the strings or runners must be taken from the roots, and the weak plants, which stand too close, must be pulled up; throwing a little fine earth at the same time over the plants, also greatly strengthens their roots. These beds, however well managed, will not continue good above three years; and the beds of the first year bearing but few fruit, it is necessary to new-plant some fresh ground every third year, and destroy the old beds; but the new ones must be first of one year's growth. Different palates prefer different species of strawberries; but the white-fruited one is of all others the best flavoured, tho' it is but a very bad bearer. The great Chili strawberry is cultivated in the fields in that country; it is a much stronger and larger plant than any of our kinds, and its fruit is as large as a walnut, but not so well-tasted as our own strawberries. Mr. Frezier brought them some years ago to Paris, and, since that, they have been spread over the several parts of Europe. They grow best in a loamy soil under the shade of trees. *Miller's Gard. Dict.*

STRENGTH, in physiology, the same with force. The strengths of different animals of the same species, or of the

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same animal at different times, are demonstrated to be in a triplicate proportion of the quantities of the mass of their blood; the whole strength of an animal is the force of all the muscles taken together; therefore, whatever increases strength, increases the force of all the muscles, and of those serving digestion as well as others.

STRENGTHENERS, in pharmacy, medicines that add to the bulk and firmness of the solids; and such are all absorbent, agglutinant, and astringent medicines.

STRÆ, in the ancient architecture, the lists, fillets, or rays which separate the striges or flutings of columns.

Among naturalists, the term *striz* denotes the small channels and ridges in scallop-shells, &c.

STRICTOR, in anatomy, the same with constrictor and sphincter.

STRIKE, a measure of capacity, containing four bushels.

STROPE, in the Greek and Latin poetry, a stanza or certain number of verses including a perfect sense; succeeded by another consisting of the same number and measure of verses, and in the same disposition and rhythmus, called *antistrophe*.

STRUMÆ, in medicine, tumours arising most usually on the neck and throat; called also *scrophulæ*, and popularly the evil, or king's evil.

STUC, or **STUCCO**, in building, a composition of white marble, pulverised and mixed with plaster of lime, the whole sifted and wrought up with water; to be used like common plaiter. This is what Pliny means by *marmoratum opus*, and *albarium opus*.

STUFF, in commerce, a general name for all kinds of fabrics of gold, silver, silk, wool, hair, cotton, or thread manufactured on the loom; of which number are velvets, brocades, mohair, sattins, taffeties, cloth, serges, &c.

STUM, in the wine-trade, denotes the unfermented juice of the grape, after it has been several times racked off, and separated from its sediment. The casks are for this purpose, well matched, or fumigated with brimstone every time, to prevent the liquor from fermenting, as it would otherwise really do, and become wine.

STUPEFIERS, in medicine, the same with narcotics and opiates.

STUPOR, a numbness in any part of the

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the body, whether occasioned by ligatures obstructing the blood's motion, by the palsy, or the like.

STURGEON, a well-known large and fine-tasted fish, caught in many places, and sometimes in the river Thames, being one of those fishes called anadromi by authors, which spend a part of their time in the sea, and a part in rivers. It never goes into the sea to any great distance, and never is caught there of any very great size. The sea serves for its production, but it is only in large rivers that it grows to its usual size.

STYE, or **STITHE**, a disorder of the eye-lids; being a small encysted tumour, about the bigness of a barley-corn.

STYGIAN LIQUORS, an appellation given to caustic and corrosive waters, and particularly to aqua regia.

STYLE, a word of various significations, originally deduced from *stylus*, a kind of bodkin, wherewith the ancients wrote on plates of lead, or on wax, &c. and which is still used to write on ivory leaves and paper prepared for that purpose, &c.

STYLE, in dialling, denotes the gnomon or cock of a dial, raised on the plane thereof, to project a shadow.

STYLE, in matters of language, the manner of expressing ourselves, or of cloathing our thoughts in words. The subject of discourse being extremely various in nature, it follows, there must be as great a variety in the style: but the matters of this art have reduced them all to three kinds, which they call the sublime, the low, and the intermediate. Let the subject of which we design a lofty idea be never so noble, its nobleness will never be seen, unless we have skill enough to represent the best of its faces to the view. The best of things have their imperfections, the least of which, discovered, may lessen our esteem, if not extinguish it quite: we must therefore take care not to say any thing in one place which may contradict what we have said in another. We ought to pick out all that is most great and noble in our subject, and put that in its best light, and then our expression must be noble and sublime, capable of raising lofty ideas: and it is our duty to observe a certain uniformity in our style; tho' all we say have not an equal magnificence, so far, at least, as to make all the parts of a piece bear a correspondence with the whole. The danger here is, lest we fall

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into a puffy style, which some call inflation, or swelling; for if we stretch things beyond their nature, and hunt only after great and sounding words, we seldom mind their agreeableness to the nature of the subject. And this has been the fault of many of our modern tragic writers, who yet with the vulgar have gained applause, and settled a reputation. We come next to the plain or low style; and this simple and plain character of writing is not without its difficulties; not in the choice of subjects, those being always ordinary and common; but because there is wanting in this style that pomp and magnificence which often hide the faults of the writer, at least from the general reader or hearer. But on common and ordinary subjects there is little room for figures and tropes, so we must make choice of words that are proper and obvious. When we call the style simple and plain, we intend not meanness of expression, that is never good, and should always be avoided; for, though the matter or subject of this style has nothing of elevation, yet ought not the language to be vile and contemptible: mob-expressions, and vulgarisms, are to be avoided, and yet all must be clean and natural.

The intermediate, or middle style, consists of a participation of the sublime on one side, and of the simplicity of the plain on the other. Virgil furnishes us with examples of all the three; of the sublime in his *Æneids*; the plain, in his *Pastorals*, and the mean, or middle, in his *Georgics*.

Though the style of an orator, or one that speaks in public, and of an historian and poet, are different, yet there are some differences in the styles of the same character; for some are soft and easy, others more strong; some gay, others more severe.

STYLE, in music, denotes a peculiar manner of singing, playing, or composing; being properly the manner that each person has of playing, singing, or teaching: which is very different both in respect of different geniuses, of countries, nations, and of the different matters, places, times, subjects, passions, expressions, &c.

Old STYLE, in chronology, a method of computing time introduced by Julius Cæsar, and which was followed in England, till the late reformation of the calendar.

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New STYLE, is the manner of computing time introduced by pope Gregory, when he reformed the Julian year; this is now followed in most countries of Europe. The new style was introduced in England, by taking eleven days off the calendar, Sept. 2. 1752.

STYLOIDES, in anatomy, an apophysis of the os petrosus, thus called from its resembling a style or stylet.

STYLOPHARYNGÆUS, in anatomy, a pair of muscles, arising round and fleshy, from the processus styloides; and which in its oblique descent becomes thicker, and is afterwards expanded on the back parts of the fauces. It serves to draw up and dilate the pharynx.

STYPTIC, in pharmacy, medicines which by their astringent qualities stop hæmorrhages. When a considerable hæmorrhage is stopped by absorbents or styptics, it is always produced by means of a clot of blood, secured by compression, so that the orifice of the vessel is stopped. This clot generally consists of two parts, the one without, and the other within the vessel: that without is formed by the last flowing blood, which in coagulating incorporates itself with the lint, mois, or powders, used for stopping the blood: the other part of the clot within the vessel, is only that portion of the blood which was ready to be discharged when the vessel was stopped. These two parts are often but one continued clot. That without the vessel performs the office of a covering, whilst that within serves as a kind of stopper. Alcohol, or pure spirit of wine, is the most usual, and perhaps the best styptic, and is the basis of most of the celebrated arcana for stopping hæmorrhages. Boerhaave says it becomes an immediate styptic, as it prevents putrefaction, and occasions a thin but very solid eschar. For if pledgets be dipped in pure alcohol, made hot, and applied to a bleeding wound, if it be closely compressed upon the part, and covered with a piece of bladder lightly besmeared with oil, and kept on with a proper bandage, the hæmorrhage presently ceases, and the whole dressing may continue unremoved for three days, in which time the vessels are usually closed, and strongly contracted and consolidated, by means of the alcohol. The styptic powder of Helvetius is a medicine said to be serviceable in uterine hæmorrhages, either to correct the too frequent return of the menses, or their too great abundance; also to stop the flooding to which women with child

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are subject, and to moderate the flow of the lochia. It is also found to have very surprising good effects in the fluxus albus. It is a composition of alum and dragon's blood: and in the Edinburgh Dispensatory, two parts of alum are directed to be made into powder with one of the dragon's blood: others use equal parts of both. Heister recommends this powder or alum alone, with a decoction of linseed. Eaton's styptic is famous for curing fresh wounds in a very small time, and immediately stopping their bleeding: but Dr. Sprengel is said to prove, beyond all possibility of doubt, that this is in effect no other than the styptic of Helvetius. The female agaric has been of late greatly celebrated as a styptic, and is said to restrain not only the venal but arterial hæmorrhages, without the use of ligatures. A styptic was lately discovered, which the inventor imagined was so extremely powerful as to be effectual after the amputation of a leg or an arm. This being represented to his present majesty George III. he pardoned a convict under sentence of death, on condition that he should lose a leg, and suffer the experiment to be tried on him: but mercy rising in the royal breast, the convict afterwards received a free pardon, and consequently the efficacy of the styptic remains undetermined.

* **SUABIA**, a circle of Germany, bounded by the circle of Franconia and the circle of the Lower Rhine on the north; on the west by the circle of the Lower Rhine, and Alsace; on the south by Switzerland; and on the east by the circle of Bavaria. It comprehends the duchy of Wirtemberg, the margravate of Baden, the principality of Hoen Zollern, that of Oerringen, that of Mindenheim, the bishopric of Constance, and the bishopric of Augsburg, with several abbeys and free cities.

SUB, a Latin preposition, signifying *under*, or *below*, frequently used in composition in our language: thus, 1. Sub-brigadier is an officer in the cavalry, who commands under the brigadier, assisting him in the discharge of his office. 2. Sub-chantor, an officer in the choir, who officiates in the absence of the cantor. 3. Sub-deacon, an ancient officer in the church, that was made by the delivery of an empty platter and cup by the bishop; and of a pitcher, basin, and towel by the arch-deacon. His office was to wait on the deacon with the linen whereon the body, &c. was consecrated, and to receive

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ceive and carry away the plate with the offerings at the sacraments, and the cup with the wine in it, &c. 4. Sub-dean, a dignity in some chapters beneath the dean. 5. Sub-marshal, an officer in the Marhalsea that is deputy to the chief marshal of the king's house who is commonly called knight-marshal, and has the custody of the prisoners there. 6. Sub prior, a claustral officer who assists the prior &c.

SUBALTERN, a subordinate officer, or one who discharges his post under the command and subject to the direction of another: such are lieutenants, sub-lieutenants, cornets, and ensigns, who serve under the captain; but custom has now appropriated the term to those of much lower ranks, as sergeants, and the like. We also say subaltern-courts, jurisdictions &c. Such are those of inferior lords, with regard to the lord paramount: hundred courts, with regard to county courts, &c.

SUBCLAVIAN, in anatomy, is applied to any thing under the arm-pit or shoulder, whether artery, nerve, vein or muscle. Subclavius more particularly denotes a small oblong muscle lying between the clavicle and first rib.

SUBCONTRARY POSITION, in geometry, is when two similar triangles are so placed, as to have one common angle at the vertex, and yet their bases not parallel.

SUBDUPLÉ Ratio, is when any number or quantity is contained in another twice. Thus, three is said to be subduple of six, and six is duple of three.

SUBDUPLICATE RATIO of any two quantities is the ratio of their square roots.

SUBJECT, a person under the rule and dominion of a sovereign prince or state.

SUBJECT, the matter of an art or science, or that which it considers, or wherein it is employed. Thus the human body is the subject of medicine.

SUBJUNCTIVE, in grammar, the fourth mood or manner of conjugating verbs; thus called because usually joined to some other verb, or at least to some other particle, as, if "I loved though this were true, &c." The Greek is almost the only language that properly has any subjunctive mood; though the French, Spanish, and Italian, have some shew thereof. In all other languages the same inflections serve for the optative and subjunctive moods; for which reason the subjunctive mood might be retrenched

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from the Latin, and those other grammars; it not being the different ways of signifying, which may be very much multiplied, but the different inflexions that constitute the different moods.

SUBLIMATE BODIES, a term used by some of our chemical writers to express such substances as are capable of sublimation in a dry form.

SUBLIMATE, a chemical preparation, the basis whereof is mercury or quicksilver. There are two kinds of sublimate; corrosive sublimate and sweet sublimate, or mercurius dulcis sublimatus.

SUBLIMATION, the condensing and collating in a solid form by means of vessels aptly constructed, the fumes of bodies raised from them by the application of a proper heat. Sublimation is in all respects the same with distillation, except that in the first the produce is solid, but in the latter fluid. The only variation therefore necessary in the operation is the accommodating the recipient part of the apparatus to this difference, which admits, in most cases, that one vessel may perform the office both of condenser and receiver, as the matter cannot, like fluids, flow to another part, but must remain where it first settles, except in some instances where the matter is extremely volatile, or where a fluid rising with it renders a depending receiver necessary.

SUBLIME, in discourse, is defined by Boileau, to be something extraordinary and surprising, which strikes the soul, and makes a sentiment or composition ravish and transport. From this definition it appears, that the sublime is a very different thing from what the orators call the sublime style. The sublime style necessarily requires sounding and magnificent words; but the sublime may be found in a single thought, a single figure, a single turn of words. A thing may be in the sublime style and yet not be sublime; that is, it may have nothing extraordinary and surprising. Longinus makes five sources of the sublime: the first, a certain elevation of the mind, which makes us think happily: the second is the pathetic, or that natural vehemence and enthusiasm which strikes and moves us; these two are wholly owing to nature, and must be born with us; whereas the rest depend partly on art: the third is the turning of figures in a certain manner, both those of thoughts and of speech: the fourth, nobleness of expression; which consists of two parts, the choice of words, and the elegant figurative diction: the fifth, which includes all the rest, is the composition

sition and arrangement of the words in all their magnificence and dignity.

SUBLINGUAL GLANDS, in anatomy, two glands under the tongue, placed one on each side thereof. These, called also hypoglossides, filtrate a serous humour of the nature of saliva, which they discharge by little ducts near the gums into the mouth.

SUBMULTIPLE, in geometry, &c. A submultiple number, or quantity, is that which is contained a certain number of times in another, and which, therefore, repeated a certain number of times, becomes exactly equal thereto; thus 3 is a submultiple of 21; in which sense submultiple coincides with an aliquot part.

SUBMULTIPLE RATIO is that between the quantity contained, and the quantity containing: thus the ratio of 3 to 21 is submultiple. In both cases submultiple is the reverse of multiple, 21, e. g. being a multiple of 3, and the ratio of 21 to 3 a multiple ratio. See *Ratio*.

SUBNORMAL, in geometry, a line which determines the point in the axis of a curve, where a normal, or perpendicular, raised from the point of contact of a tangent in the curve, cuts the axis. Or the subnormal is a line which determines the point wherein the axis is cut by a line falling perpendicularly on the tangent in the point of the contact.

SUBORDINATION, a relative term, expressing the degree of inferiority between one thing and another.

SUBORDINATION, a secret or under-hand preparing, instructing, or bringing in a false witness, or corrupting or alluring a person to do such a false act.

SUBPOENA, a writ, whereby any person, under the degree of peerage, is called to appear in Chancery, in cases where the common law has made no provision. The name is taken from the words in the writ, which charge the party summoned to appear at the day and place assigned, *sub poena centum librarum*, on the penalty of an hundred pounds.

SUBROGATION, or **SURROGATION**, in the civil law, the act of substituting in the place, and intitling him to the rights, of another.

SUBSCRIPTION in general signifies the signature put at the bottom of a letter, writing or instrument. In commerce, it is used for the share or interest which particular persons take in a public stock or trading company, by writing their names, and the shares they require in the books or register thereof. Subscription, in the commerce of books, signifies an engage-

ment to take a certain number of copies of a book going to be printed; and a reciprocal obligation of the bookseller or publisher to deliver the said copies on certain terms.

SUBSEQUENT, something that comes after another, particularly with regard to the order of time.

SUBSIDY, in law, an aid or tax granted to the king, by parliament, for the necessary occasions of the kingdom; and is to be levied on every subject of ability, according to the rate or value of his lands or goods: but this word, in some of our statutes, is confounded with that of customs.

SUBSISTENCE, in the military art, the money paid to the soldiers weekly, not amounting to their full pay; because their cloaths, accoutrements, tents, bread, &c. are to be paid. It is likewise the money paid to officers upon account, till their accounts are made up, which is generally once a year, and then they are paid their arrears.

SUBSTANCE, something that we conceive to subsist of itself, independently of any created being, or any particular mode or accident.

SUBSTANTIAL, in the schools, something belonging to the nature of substance.

Substantial is also used in the same sense with essential, in opposition to accidental.

SUBSTANTIVE, in grammar, a noun, or name, considered simply and in itself, without any regard to its qualities, or other accidents, in contradistinction to the noun termed adjective, or that which expresses a certain quality or accident of the noun substantive. Or, a noun substantive is that noun, which, joined to a verb, makes a perfect sentence, as *a man*, *a horse*, *a house*; thus *a man laughs*, *a horse gallops*, *a tree buds*, are each of them perfect sentences. All nouns, to which one cannot add the word *being*, are substantives; and those to which *being* may be added are adjectives.

SUBSTITUTE, a person appointed to officiate for another, in case of absence, or other legal impediment.

SUBSTITUTE, in medicine, a drug or remedy that may be used instead of another; or that supplies the place of another, of like virtue, which is not perhaps to be had: called also *succedaneum*.

SUBSTITUTION, in grammar, the using of one word for another, or one mode, state, person, or number, of a word for another.—This the grammarians otherwise call *syllipsis*.

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SUBSTITUTION, in algebra, &c. the putting, in the room of any quantity in an equation, some other quantity which is equal to it, but expressed after another manner.

SUBTANGENT of a Curve, the line that determines the intersection of a tangent with the axis; or, that determines the point, wherein the tangent cuts the axis, prolonged.

SUBTENSE, in geometry, the same with chord. See *Chord*.

SUTERRANEOUS, or **SUTERANEAN**, something under-ground. The word is formed from the Latin, *sub*, under, and *terra* the earth.

SUBTILE, in physics, intimates a thing exceedingly small, fine, and delicate; such as the animal spirits, the effluvia of odorous bodies, &c. are supposed to be.

SUBTRACTION, or **SUBTRACTIO**, in arithmetic, the rule by which one number is deducted from, or taken out of another, that so the remainder, difference of excess, may be known.

The word is Latin, *substractio*, and is derived from *sub* and *traho*, to draw.

Thus, 6 taken out of 9, there remains 3. This 3 is also the difference betwixt 6 and 9, or it is the excess of 9 above 6.

Therefore the number or sum out of which subtraction is required, must be greater, or at least equal to the subtrahend, or number to be subtracted.

Note. This rule is the converse or direct contrary to addition.

And here the same caution that was given in addition of placing figures directly under those of the same value, viz. units under units, tens under tens, and hundreds under hundreds, &c. must be carefully observed; also, underneath the lowest rank there must be drawn a line, to separate the given numbers from their difference, when it is found.

Then, having placed the lesser number under the greater, the operation may be thus performed.

Rule. Begin at the right-hand figure or place of units, as in addition, and subtract the lower figure from the figure that stands over it, setting down the difference underneath the same; if the two figures chance to be equal, set down a cypher. But, if the up figure be less than the lower, then you must add 10 to the upper figure more than it is, and from that sum subtract the lowest figure, setting down the remainder, as before directed. Now, because the 10, thus added, was supposed to be borrowed from the next superior place, viz. of tens, in

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the upper figures, therefore you must call the next lower figure one more than it really is, and then proceed to subtract in that place as in the former; and so gradually on from one row of figures to another, until all be done.

Examp. 1. Let it be required to find the difference between 6785 and 4572.—That is, let 4572 be subtracted from 6785. These numbers being placed down as before directed, will stand

Thus $\begin{array}{r} 6785 \\ - 4572 \\ \hline \end{array}$

2213.

Beginning at the place of units, take 2 from 5 and there will remain 3, which must be set down underneath its own place; and then proceed to the place of tens, taking 7 from 8 and there will remain 1, to be set down underneath its own place; again, at the place of hundreds, take 5 from 7 and there remains 2, which is set down in its place; lastly take 4 from 6 and there remains 2, which being set underneath its own place, the work is finished, and the difference so found will be 2213=6785—4572, as was required.

SUBTRACTION of divers Denominations, as of money, &c.—Begin with the lowest or least denomination, and subtract the figure or figures in that place from the figure or figures that stand over them of the same denomination, setting down the remainder; but if the lower figure be greater than that above it, you must increase the upper figure by adding to it one of the next superior denomination, and from that sum subtract, and then proceed to the next superior denomination, and add one to the lower figure for what you borrowed, as in whole numbers.

	<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>
From	386	9	8	From	569	10	6
Take	173	4	6	Sub.	389	15	8

213 5 2

179 14 10

The first of these examples is self-evident: in the second example, beginning at the place of pence, being the least denomination, I am to take 8 from 6, but as that cannot be done, I must, according to the rule, borrow one of the next denomination, viz. 1s. and add it to the 6d. which makes it 18d. then I take 8d. from it, and there remains 10d. to be set down underneath the place of pence; that done, I proceed to the place of shillings, carrying 1 to the lower figure 15 for what I borrowed, which

L1

makes

makes 16, which from ten cannot be got; but from 30, by borrowing one of the next denomination, viz. 1, and there remains 14, which having set down in its proper place, I proceed to the place of pounds, where carrying the one I borrowed to 9 makes 10 from 19, and there remains 9; and so on as in whole numbers till all be finished.

SUBTRACTION of *Algebra*, is performed by the following general rule. Change the signs of the quantity to be subtracted in their contrary signs, and then add it, so changed, to the quantity, from which it was to be subtracted, and the sum arising by this addition is the remainder. For to subtract any quantity positive, or negative, is the same as to add the opposite kind.

Example. From $+5a$ $8a - 7b$
Subtract $+3a$ $3a + 4b$
—————
 $5a - 11b$

Remainder $5a - 3a$, or $2a$

From $2a - 3x + 5y - 6$

Subtract $6a + 4x + 5y + 4$

Rem $-4a - 7x - 10$

It is evident, that to subtract or take away a decrement is the same as adding an equal increment. If we take away $-b$ from $a - b$, there remains a ; and if we add $+b$ to $a - b$, the sum is likewise a . In general, the subtraction of a negative quantity is equivalent to adding its positive value.

SUBTRIPLE Ratio, is when one number or quantity is contained in another three times.

Thus, 2 is said to be the subtriple of 6, and 6 the triple of 2.

SUCCEDANEUM, in pharmacy, a remedy substituted in the place of another first prescribed, when the ingredients are wanting necessary for the composition of that ether.

SUCCESSION, in philosophy, an idea which we get by reflecting on that train of ideas constantly following one another in our minds, when awake. See *Idea*.

SUCCESSION, in law, implies a right to the whole effects, left by a defunct.

SUCCULA, in mechanics, a bare axis, or cylinder, with flaves to it round, but without any tympanum or peritrochium.

SUCKERS, in gardening, the same with off-sets. See *Off-sets*.

SUCTION, the act of sucking or

drawing up a fluid, the air, water, milk, or the like, by means of the mouth and lungs. There are many effects vulgarly attributed to suction, which, in reality, have very different causes. As when any one sucks water, or any other liquor, up through a pipe, it is commonly thought, that by that action the person draws the air up into his mouth, and that the water, which is contiguous to it, follows it by a kind of attraction, as if the air and water hung together; and others fancy, that the air moves into the mouth of the sucker, and the water moves up after the air, to prevent a vacuum, which, they say, nature abhors: whereas the true cause of this phenomenon is only that the air and atmosphere presses, with its whole weight, uniformly on the surface of the liquor in the vessel; and consequently, prevents any one part of the water to rise higher than the other there; and if a pipe be put in, of any tolerable large bore, and be open at both ends, the water will rise within the pipe to the same height as without, and indeed, a little higher, because the pressure of the air within the pipe is a little taken off by bearing against the sides of the pipe. Now when any one applies his mouth to the upper end of the pipe, and sucks, his lips so strongly inclose the pipe, that no air can get between them and it; and by the voluntary motion of the spirits in the muscles, the cavity of his thorax, or breast, is opened and enlarged; by which means the air is included there, hath now a much larger place to dilate itself in, and consequently, cannot press so strongly against the upper end of the pipe, as it did before the cavity of the thorax was so enlarged, and when the weight of the whole atmosphere kept its spring bent. And that weight or pressure being now taken off by the lips of the man that sucks, the equilibrium is destroyed, the air gravitates on the surface of the water, but cannot do so on the upper orifice of the pipe, because the juncture of the lips takes it off; and the spring of the air included in the thorax, being weakened by the dilation of its cavity, it cannot press so hard against the upper orifice of the pipe, as the water will do against the lower, and, consequently, the water must be forced up into the pipe. It is much the same thing in the suction of a common pump: the sucker being tight, takes off entirely the pressure of the atmosphere on the surface of the water within

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within the barrel of the pump; and, consequently, the atmosphere, by its weight, must force the water up to make the equilibrium.

SUDAMINA, little heat pimples in the skin, like the millet-grains, frequent in youth, especially those of a hot temperament, and that use much exercise.

SUDORIFIC, in medicine, a remedy that causes or promotes sweat. The word is formed from the Latin *sudor*, sweat, and *facio*, to cause.

SUET, in anatomy, the solid fat found in several animals, as sheep, oxen, &c. but not in the human species.

SUFFOCATION, in medicine, the privation of respiration, or breathing; which is sometimes occasioned by a congestion of blood in the lungs, so as to prevent the ingress of the air. The fumes of wine, or other strong liquors, when boiling, likewise cause suffocation; as do the fumes of lime, charcoal, antimony, sulphur, vitriol, spirit of nitre, &c.

SUFFOLK, a county of England, bounded on the north by Norfolk, on the west by Cambridgeshire, on the south by Essex, and on the east by the German ocean. It is sixty-two miles in length, and twenty-two in breadth, and contains 575 parishes and twenty-eight market-towns. The commodities are excellent butter, all sorts of corn, pease, hemp, and several manufactures; and the coast has been noted for the fishing trade. The principal rivers are the Little Ouse, the Waveney, the Stour, the Orwel, the Deben, the Ore, and the Blyth. The air is sweet and wholesome. Ipswich and St. Edmund's-Bury are the principal towns.

SUFFRAGAN, an appellation given to simple bishops, with respect to archbishops, on whom they depend, and to whom appeals lie from the bishop's court.

SUFFRAGE, a voice or vote given in an assembly where something is deliberated on, or where a person is elected to an office or benefice.

SUFUSION, in medicine, the same with cataract. See *Cataract*.

SUGAR, *Saccharum*, a very sweet agreeable substance, extracted from a kind of canes, or reeds, growing in great plenty in both the East and West-Indies. Sugar grows in a long stalk, which is called a cane, full of joints, two, three, four, or five inches asunder, and about six feet high; the sprouts and leaves of

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which rising up so high, as may make it near eight feet in all. The body of the cane is about an inch in diameter, seldom more; the colour of the cane-tops is a pure grass-green; the cane itself is yellowish when ripe: it is covered with a thick skin or bark, somewhat hard on the inside, being of a white spongy substance, full of juice, which the inhabitants of Jamaica suck and eat in great quantities, without injuring their health: nothing is pleasanter than this sap, when the cane is ripe; it is also very nourishing and wholesome, if taken with moderation. Their way of eating it is thus: they cut the skin or rind off, and put the pith or spongy parts into their mouths, when the juice will come out more freely than honey out of the comb: it is not surfeiting, but the cleanest and best sweet in the universe. The nature of this juice is much like that of apples, but something thicker; it is yellow when the cane is ripe, clean, and without any ill taste or smell, and goes off the palate as sweetly as it came on. Of this juice, sugar, rum, and melasses are made.

Sugar, is supposed to unite the unctuous part of the food with the animal juices. Hence some have concluded, that it increases corpulence or fatness; others, that it has a contrary effect, by preventing the separation of the oily matter, which forms fat, from the blood; and others, that it renders the juices thicker and more sluggish, retards the circulation, obstructs the natural secretions, and thus occasions or aggravates scorbutic, cachectic, hypochondriacal, and other disorders. General experience, however, has not shown, that sugar produces any of these effects in any remarkable degree: its moderate use appears to be innocent; and perhaps, of all that have yet been discovered, it is the most universally innocent and inoffensive, as well as the most simple sweet. Sugar preserves both animal and vegetable substances from putrefaction, and appears to possess this power in a higher degree than the common alimentary salt; animal flesh having been preserved by it untainted for upwards of three years. From this it has been sometimes applied externally as a balsamic and antiseptic. The impure brown sugars, by virtue of of their oily or treacly matter, prove emollient and gently laxative. The uses of sugar in medicinal compositions, whether for their preservation, for procuring the intended form and consistence, or

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for reconciling to the stomach and palate substances of themselves disgusting, are too obvious to require being enlarged on.

Sugar was known to the ancients; Dioscorides and Galen called it *saccharum*, and Theophrastus *mel in arundinibus*, honey in reeds. Arrian also calls it *mel arundineum*, and Egineta *sal Indicus*, Indian salt. Notwithstanding, however, that the ancients were all acquainted with sugar, they did not bring it into common use as we do. All their writers, however, mention it as a thing known. Strabo says, that Indian honey, as he calls it, was produced without bees. Lucan speaks of the honey-juice of reeds; and Varro tells us, that a sweet juice was expressed from the Indian reeds, and was equal to honey. Seneca tells us of honey found in reeds, in India, and is in some doubt whether it was a honeydew, as they supposed manna to be, or whether it was the genuine product of those reeds. The Greeks indifferently called the sugar of those times by the names of honey, salt, and sugar.

Dioscorides makes it a kind of honey, and says, that besides the common honey, there was another sort called *saccharum*, which was found in reeds, in Arabia and the Indies, and was like a salt, hard and brittle under the teeth. Pliny also agrees that there were sugar-canes in Arabia, which produced sugar like those of the Indies, but that it was inferior to that of India.

We find by all their accounts, that they knew the sweet juice of these reeds, and that they also sometimes, had sent over to them concremented granules of real sugar, which had exsuded from the reeds, and dried in the sun to a hardness; these were the pieces of sugar which Dioscorides mentions, as crackling under the teeth. And others tell us they were of the size of a pea, or at the most of a horse-bean. It is plain, however, that they knew nothing of the art of making sugar by boiling the juice.

In some parts of North America, particularly in Canada, a kind of sugar is prepared from the juice which issues upon wounding or boring certain species of the maple-tree, one of which is named from hence the sugar maple; as also from the wild or black birch, the honey-locust, and the hickory. The maple is most commonly made use of for this purpose, as being the richest, and as best enduring the long and severe winters of

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that climate. The juice is boiled down, without any addition, to a thick consistence, then taken off from the fire, kept stirring till its heat is abated, and set in a cold place; where the sugar quickly concretes into grains, resembling common brown sugar.

The common birch bleeds also a large quantity of a sweetish juice, which yields on being inspissated a sweet saline concrete, not however perfectly of the saccharine kind, but seeming to approach more to the nature of manna. There are sundry other vegetables, raised in our own country, which afford saccharine concretes; as beet roots, skirrets, parsnips, potatoes, celery, red-cabbage-stalks, the young shoots of Indian-wheat, &c. The sugar is most readily obtained from these, by making a tincture of the subject in rectified spirit of wine; which when saturated by heat will deposit the sugar upon standing in the cold.

SUGAR-MILL, a machine for bruising the sugar-canes, in order to extract their juice, for making sugar.

SUGAR-CANDY, *Saccharum Candum*, or *Cryhallinum*, is sugar depurated and crystallised.

This is better made of earthed sugar, than refined sugar, because the former is sweeter. The sugar to be used herein is first dissolved in weak lime-water, then clarified, scummed, strained through a cloth, and boiled, and put in forms or moulds that are traversed with little rods, to retain the sugar, as it crystallises. These forms are suspended in a hot stove, with a pot underneath, to receive the syrup that drops out at the hole in the bottom, which is half stopped, that the filtration may be gentler. When the forms are full, the stove is shut up, and the fire made very vehement. Upon this the sugar fastens to the sticks that cross the forms, and there hangs in little splinters of crystal. When the sugar is quite dry, the forms are broke and the sugar taken out, candied. Red sugar-candy they make, by casting into the vessel, where the sugar is boiling, a little juice of the Indian fig; and, if it is desired to have it perfumed, they cast a drop of some essence in, when the sugar is putting into the forms. This method of making sugar-candy is that of F. Labat practised in the Caribbees: the method in Europe, described by Pomet, is somewhat different.

White SUGAR-CANDY, they make of white refined sugar, boiled with water into a thick syrup, in a large pan. It is candied

candied in a stove, whither it is carried inclosed in brass peels, crossed with little rods, about which the crystals fasten, as they are formed. The fire of the stove is kept equable for fifteen days; after which the sugar is taken out of the peels to be dried. Red or brown sugar-candy is made like the white, except that they only use brown sugars and earthen pots.

Barley SUGAR, Saccharum Hordeatum, is a sugar boiled till it is brittle, and then cast on a stone anointed with oil of sweet almonds, and formed into twilted sticks, about the length of the hand, and the thickness of a finger. It should be boiled up with a decoction of barley, whence it takes its name; but in lieu thereof they now generally use common water, to make the sugar the finer.—To give it the brighter amber colour, they sometimes cast saffron into it.—It is found very good for the cure of colds and rheums.

SUIT, in law, is used in different senses; as, 1. For an action, whether, personal or real. 2. Suit of court, or suit-service, which is an attendance the tenant owes to his lord's court. 3. Suit covenant, where a person has covenanted to do service in the court of the lord. 4. Suit custom, which is where one and his ancestors have owed suit time out of mind. 5. It is used for a petition to the king, or any person of dignity: where a lord distrains his tenant for suit, and none is due; in this case, the party may have an attachment against him to appear in the king's court. 6. Suit of the king's peace, is an action brought against a person for breach of the king's peace; as in the case of treasons, felonies, or trespasses.

SULPHUR, in natural history, a mineral substance, fusible and inflammable by fire, and not dissoluble or miscible in water. The name of sulphur has been applied by some to the inflammable principle of bodies; by others, to all inflammable mixts, or substances participating of this principle; and the alchemists speak also of a sulphur that does not burn. Vegetables, oils and resins, animal fats, mineral bitumens, are by some called sulphurs; and by some sulphur itself is referred to the bitumens. This confusion has given rise to numerous errors and absurdities: how widely different is the true sulphur, in all its properties, from bitumens, or oils, or any other kind of inflammable body! If every thing that burns was to be called sulphur, we might with equal propriety

call every thing that is liquid by the name of water, or of spirit of wine, or vinegar, or oil, or any other particular liquor. Experiment has fully evinced, that sulphur is no other than the concentrated vitriolic acid combined with a small proportion of the phlogistic or inflammable principle; and to this combination alone, which is always one and the same, excepting for adventitious admixtures, the more judicious chemists have wholly confined the name.

Sulphur is a solid brittle concrete, of a yellow colour inclining a little to greenish, in some degree glossy. Held in the warm hand, it crackles or bursts; and leaves on the hand a particular kind of smell. It is nearly twice as heavy as an equal bulk of water.

It melts in a small degree of heat into a red pellucid fluid, and on cooling concretes again into its original appearance. Some have endeavoured to purify sulphur from the drossy matters which are often mixed with it, by melting and pouring it into spirit of wine: others have melted it with wax, and poured the fluid mixture into water when the sulphur subsides, and the wax arises to the surface, carrying up with it a part of the impurities. With regard to spirit of wine, it can have no effect in separating foreign matters from the sulphur, though it seems in some measure to heighten the yellow colour. Wax on the other hand renders it greener, and if the fusion is several times repeated, changes it quite blackish.

Sulphur kept in fusion, gradually exhales; if the air is excluded, it sublimes into the upper part of the vessel, without undergoing any other alteration, than being reduced into the form of powder or flowers. This property affords a method of purifying it effectually from earthy, stony, or other fixed matters; and at the same time of reducing it into a finer powder than can easily be obtained by trituration. Where only a small quantity of flowers of sulphur is wanted, the sublimation may be performed in a jar, with aludels closely luted upon it, and a blind-head at top. In England, they are prepared by particular persons in the way of trade: the subliming vessel is an iron pot, so large as to hold two or three hundred weight or more of sulphur, about a fourth of its capacity remaining empty; the recipient is an arched room built above the pot, and communicating with it at one side by an aperture of six or eight or more inches in diameter. The room is lined

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lined with glazed tiles; and furnished with a door, by which a man may creep in, when the operation is finished, to sweep out the flowers. In the middle of the door is a small hole, which is opened occasionally during the sublimation, for examining whether the flowers continue or have ceased to arise.

In open vessels, sulphur readily takes fire from the contact of ignited bodies, and if kept in fusion, burns entirely away, with a blue flame, and a diffusive suffocating fume. This fume is no other than the vitriolic acid volatilized by the flame: a considerable quantity of it may be detained, and condensed into a liquid form, by placing over the burning sulphur capacious glass vessels, replete with aqueous vapours: the larger the receivers, and the less communication the flame has with the external air, the more of the fumes will be preserved.

The common apparatus for this purpose consists of a little earthen dish, for burning the sulphur in; a glass bell, suspended over the flame; and a broad glass or earthen vessel, which supports the dish with the sulphur, and receives the acid liquor as it drops from the sides of the bell. Many variations have been made in this apparatus, with a view to detain the fumes more effectually. Instead of the bell, from which the acid has received the name of *spiritus sulphuris per campanam*, some have employed a glass differing from that shape in having a rim turned in at the bottom, and a tube at the top, to which a receiver is fitted as an enlargement of the capacity of the vessel; others a retort, with its bottom cut out, and a glass body or tubulated receiver applied to its neck; others a receiver, with a hole in its bottom for admitting the flame; others a glass body, with some water in its bottom, holes in the sides, a crucible with burning sulphur placed in the water, and another body inverted on the mouth: some have suspended the burning sulphur in a wooden cask half full of water, and afterwards rectified the liquor. The grand difficulty is, that sulphur will not burn without a draught of air, and the acids fumes are so volatile that far the greatest part of them is carried off by the air. Some direct a little nitre to be mixed with the sulphur, to promote its burning; but though nitre is undoubtedly of advantage in that respect, it is injurious in another; rendering the product impure, by giving out its own acid along with that of the sul-

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phur. Many other contrivances have been made, but none with any commendable success; the same acid being obtainable at a much easier rate from vitriol, than by any methods of procedure to which sulphur has hitherto been submitted. The best way hitherto discovered of collecting the acid spirit of sulphur in a volatile state, is that given by Stahl: the sulphur is made to burn slowly by means of a wick, a number of aludels set over it, and a cloth moistened with strong alkaline ley placed in each aludel: as soon as any of the cloths become dry, a moist one is put in its room. The alkaline salt which the cloths were impregnated with, imbibes the acid fumes, and is thus converted into a neutral salt, which is easily rubbed out. It is the volatile vitriolic acid that this salt contains; and hence, upon adding to it common oil of vitriol, in a tubulated retort, the volatile spirit distils, leaving the alkali combined with the more powerful fixed acid superadded. The volatile however, as well as the fixed acid, is still more commodiously and advantageously obtainable from vitriol itself.

Sulphur unites in the fire with most metallic bodies, promotes the fusion of the refractory ones, iron and copper, renders lead on the other hand almost unfusible, and debases the quality of them all. It changes several into the appearance of their own ores; silver, into a soft leaden coloured substance, resembling the malleable silver ore; iron and copper into yellowish concretes, like the natural pyrites; the antimonial regulus into antimony; quicksilver and arsenic into red compounds, the same with the native cinnabar and red arsenic; lead into a dark coloured mass, like its common ore; tin into a substance like antimony, a form in which that metal is never found in the earth. Pure silver does not act upon gold, but sulphurated alkali or *hepar sulphuris* unites with gold in fusion as well as with other metals, and renders it dissoluble in water so as to pass through the pores of a filter. The principal use of sulphur is in fire-works, and for making gunpowder. It is likewise employed in some woollen manufactures, in bleaching, for making cinnabar, by the wine-coopers, for sundry economical and other like purposes. It is used medicinally against cutaneous eruptions, and disorders of the lungs: from the virtues attributed to it in this last intention, it has received the name of *anima pulmonum*.

SUM,

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SUM, in arithmetic, &c. the quantity that arises from the addition of two or more magnitudes, numbers, or quantities together. The sum of an equation is, when the absolute number being brought over to the other side with a contrary sign, the whole becomes equal to 0: this Des Cartes calls the sum of the equation proposed.

* **SUMATRA**, an island of the East Indian Sea, and one of the three largest of the Sunda islands, lying to the west of the peninsula of Malacca, and the island of Borneo; and is separated from Java by the strait of Sunda. It is about 750 miles in length, and 175 in breadth. This island lies nearly under the equator. Here the natives generally build their houses upon posts, to secure them from the yearly inundations. The English have several forts and factories on the west coast, the chief of which is Bencoolen, which is now built five miles up the country, the place where it stood formerly being very unwholesome; and they have given it the name of Marlborough fort. The chief commodities exported from hence are pepper, canes, and gold-dust. The chief grain here is rice; and they have also sugar, plantains, pine-apples, cocoa-nuts, limes, citrons, oranges, melons, and pomegranates. Achin, or Atcheen, is the most remarkable place for trade, and lies at the north-west end of the island; elephants are very plentiful here, and consequently their teeth. The inhabitants are all of a black complexion, with long hair.

SUMMARY, in matters of literature, the same with abridgment.

Summary, however, is often used for a table of contents, placed at the beginning of books, to shew the principal heads treated of therein.

SUMMER, one of the seasons of the year, commencing in these northern regions on the day the sun enters Cancer, and ending when he quits Virgo. Or, more strictly and universally, the summer begins on the day when the sun's meridian distance from the zenith is the least; and ends on the day when his distance is a mean betwixt the greatest and smallest. The end of summer coincides with the beginning of winter.

SUMMER, in architecture, a large stone, the first that is laid over columns and pilasters, in beginning to make a cross vault; or it is the stone which, being laid over a pier or column, is hol-

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lowed to receive the first haunce of a plumb-line.

SUMMER, in carpentry, a large piece of timber, which being supported on two stone piers or posts, serves as a lintel to a door, window, &c.

SUN, *Sol*, in astronomy, the great luminary which enlightens the world, and, by his presence, constitutes day. Sir Isaac Newton, in his *Principia*, proves that the matter of the sun to that of Jupiter is nearly as 1100 to 1; and that the distance of that planet from the sun is in the same ratio to the sun's semi-diameter. That the matter of the sun to that of Saturn is as 2360 to 1; and the distance of Saturn from the sun is in a ratio but a little less than that to the sun's semi-diameter. And consequently that the common center of gravity of the sun and Jupiter is nearly in the superficies of the sun: of Saturn and the sun, a little within it. And by the same manner of calculation it will be found, that the common center of gravity of all the planets cannot be more than the length of the solar diameter distant from the center of the sun. This common center of gravity he proves to be at rest; and therefore, though the sun, by reason of the various position of the planets, may be moved every way, yet it cannot recede far from the common center of gravity. And this he thinks ought to be accounted the center of our world. *Book 3. prop. 12.*

By means of the solar spots it hath been discovered, that the sun revolves round his own axis, without moving (considerably) out of his place, in about twenty-five days. And that the axis of this motion is inclined to the ecliptic, in an angle of 87 degrees, 30 minutes, nearly. *Gregor. Astron.*

The sun's apparent diameter being sensibly shorter in December than in June, as is plain and agreed from observation, the sun must be proportionably nearer to the earth in winter than in summer; in the former of which seasons will be the perihelion, in the latter the aphelion: and this is also confirmed by the earth's moving swifter in December than it doth in June. For since, as Sir Isaac Newton hath demonstrated by a line drawn to the sun, the earth always describes equal areas in equal times, whenever it moves swifter, it must needs be nearer to the sun. And for this reason there are about eight days more from the sun's vernal equinox

to

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to the autumnal, than from the autumnal to the vernal. According to Mr. Cassini, the sun's greatest distance from the earth is 22374, his mean distance 22000, and his least distance 8222 semi-diameters of the earth. And that the sun's diameter is equal to 100 diameters of the earth, and therefore the body of the sun must be 1000000 times greater than that of the earth.

Mr. Azout assures us, that he observed by a very exact method the sun's diameter to be not less than 31 minutes 45 seconds, in his apogee, and not greater than 32 minutes 45 seconds, in his perigee.

The mean apparent diameter of the sun, according to Sir Isaac Newton, is 32 minutes 12 seconds; in his theory of the moon, 32 minutes 15 seconds.

If you divide 360 degrees (i. e. the whole celestial) by the quantity of the solar year, it will quote 59 minutes 8 seconds, &c. which therefore is the quantity of the sun's diurnal motion. And if this 59 minutes 8 seconds be divided by 24, you have the sun's horary motion, which is 2 minutes 28 seconds; and, if you will divide this last by 60, you will have this motion in a minute, &c. And this way are the tables of the sun's mean motion, which you have in the books of astronomical calculation, constructed.

The sun's horizontal parallax Dr. Gregory and Sir Isaac Newton make but 10 seconds.

To find this angle, astronomers have attempted variety of methods, but have as yet found none that will determine it exactly; however, by many repeated observations of Dr. Halley, it is found to be not greater than 12", nor less than 9". Wherefore 10 $\frac{1}{2}$ " (the mean) has been fixed upon as near the truth. By a transit of Venus over the sun's disk, the same gentleman has shewn how the sun's parallax may be determined to a great nicety, viz. to within a 500th part of the whole. See Phil. Trans. No. 348, abridged by Jones, Vol. IV.

Sir Isaac Newton, in his Optics, gives good reasons to suppose the sun and fixed stars to be great earths vehemently hot, whose heat is conserved by the greatness of their bodies, and the mutual action and re-action between them and the light which they emit; and whose parts are kept from running away, not only by their fixity, but also by the vast weight and density of the atmospheres incumbent on them, and every way strongly

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compressing them, and condensing the vapours and exhalations which arise from them. The light seems to be emitted from the sun and fixed stars (which probably are suns to other systems) much after the manner as iron, when heated to such a degree as to be just going into fusion, by the vibrating motion of its parts, emits, with force and violence, copious streams of liquid fire all around. Great bodies must preserve their heat longest, and that, perhaps, in the proportion of their diameters.

SUN-FLOWER, in botany, a genus of plants, the flower of which is of a radiated kind; its disk is made up of floscules, and its outer edge of semidioscules; these stand upon the embryo seeds, and are separated from one another by little leaves of an imbricated figure, and contained in a scaly husk, or cup; the embryos finally ripen into seeds furnished with two little leaves. See *Helianthus* and *Helianthemum*.

SUNDAY, or the LORD'S DAY, a solemn festival observed by Christians on the first day of every week, in memory of our Saviour's resurrection. This is the principal and most noted of the Christian festivals, and was observed with great veneration in the ancient church, from the time of the apostles, who themselves are often said to have met on that day for divine service. It is likewise called the Sabbath-day, as being substituted in the room of the Jewish sabbath. The ancients retained the name Sunday, or *die solis*, in compliance with the ordinary forms of speech, the first day of the week being so called by the Romans, because it was dedicated to the worship of the sun.

Besides that the most solemn parts of the Christian worship were always performed on Sundays, this day was distinguished by a peculiar reverence and respect expressed towards it in the observation of some special laws and customs. Among these, we may reckon in the first place, those imperial laws which suspended all proceedings at laws upon this day, excepting only such as were of absolute necessity, or eminent charity; such as the manumission of slaves and the like. Neither was it only the business of the law, but all secular and servile employments were superseded upon this day, still excepting acts of necessity and mercy. Another thing which the christian laws took care of, to secure the honour and dignity of the Lord's day, was, that no audi-

ludicrous sports or games should be followed on this day; but all such recreations and refreshments as tended to the preservation or convenience of life were allowed of; and therefore Sunday was always a day of feasting, and it was not allowable to fast thereon, not even in Lent. The great care and concern of the primitive christians in the religious observance of the Lord's day, appears first from their constant attendance upon all the solemnities of public worship, from which nothing but sickness, imprisonment, banishment, or some great necessity could detain them. Secondly, from their zeal in frequenting religious assemblies on this day, even in times of the hottest persecution, when they were often beset and seized in their meetings and congregations. Thirdly, from their studious observations of their vigils or nocturnal assemblies that preceded the Lord's day. Fourthly, from their eager attendance on sermons, in many places twice upon this day, and their constant resorting to evening prayers, where there was no sermon. Lastly, from the severe censures inflicted on those who violated the laws concerning the religious observance of this day, such persons being usually punished with excommunication, as appears from the apostolical constitutions, and the canons of several councils. In the Romish breviary, and other offices, we meet with a distinction of Sundays, into those of the first and second class; Sundays of the first class are, Palm-sunday, Easter-sunday, Advent, Whit-sunday, &c. those of the second class are the common Sundays of the year.

By our laws, no person is to do any worldly labour on this day, which is set apart for the service and worship of God, except works of necessity and charity, under the penalty of five shillings. And if any person cry, or expose to sale any wares, or goods on a Sunday, the same will be forfeited to the poor, &c. the offender being convicted thereof before a justice of the peace, &c. who is authorized to cause the penalties and forfeitures to be levied by distress. Yet this extends not to the dressing of meat, nor to the selling of milk in the morning or evening, or the selling of mackerel on that day. The Sunday is not a day in law, so that no process lies, or may be served thereon, except for treason, or felony, or an escape. A sale of goods, or contract made on a Sunday, is deemed void.

SUNDAY Letter. See *Dominical Letter*.
VOL. IV.

SUPERCARGO, a person employed by merchants to go a voyage, and oversee their cargo, or lading, and dispose of it to the best advantage.

SUPERCILIUM, in anatomy, the hairy arch extended over the orbit of each eye.

SUPERCILIUM, in the ancient architecture, the uppermost member of the cornice, called by the moderns corona, crown, or larmier.

It is also used for a square member, under the upper tore in some pedestals; some authors confound it with the tore itself.

SUPEREROGATION, in theology, what a man does beyond his duty, or more than he was commanded to do. The Romanists stand up strenuously for work of supererogation, and maintain, that the observance of evangelical councils is such. By means of which, a stock of merit is laid up, which the church has the disposal of, and which she distributes in indulgences to such as need. The reformed churches do not allow of any work of supererogation.

SUPERFETATION, in medicine, a second, or after-conception, happening, when the mother, already pregnant, conceives of a later coition; so that she bears at once two foetuses of unequal age and bulk, and is delivered of them at different times. We meet with instances of superfetations in Hippocrates, Aristotle, Du Laurens, &c.

SUPERFICIES, or **SURFACE**, in geometry, a magnitude considered as having two dimensions, or extended in length and breadth, but without thickness or depth. In bodies, the superficies is all that presents itself to the eye. A superficies is chiefly considered as the external part of a solid. When we speak of a surface simply, and without any regard to body, we usually call it figure. The several kinds of superficies are as follow, Rectilinear superficies, that comprehended between right lines; curvilinear superficies, that comprehended between curve lines; plane superficies, is that which has no inequality, but lies evenly between its boundary lines; convex superficies, is the exterior part of a spherical, or spheroidal body; and a concave superficies, is the internal part of an orbicular or spheroidal body.

The measure or quantity of a superficies, or surface, is called the area thereof.

The finding of this measure, or area, is called the quadrature thereof.

To measure the surfaces of the several kinds of bodies, as spheres, cubes, parallelopipeds,

lelopipeds, pyramids, prisms, cones, &c. See *Sphere*, &c.

Line of SUPERFICIES, a line usually found on the sector, and Gunter's scale, the description and use whereof, see under the article *Sector and Gunter's Scale*.

SUPERFINE, in the manufactories, a term used to express the superlative fineness of a stuff; thus a cloth, a cambric, &c. are said to be superfine, when made of the finest wool, &c. or when they are the finest that can be made. The term is particularly used among gold or silver wire-drawers, for the gold or silver wire, which after being drawn through an infinite number of holes, each less and less, is at length brought to be no bigger than an hair.

SUPERINTENDANT, in the French customs, an officer who has the prime management and direction of the finances or revenues of the king. The term is also used for the first officer of the queen's household, who has the chief administration thereof. They have also a superintendent of the buildings, answering to the surveyor of the works among us.

SUPERIOR, or *SUPERIOUR*, something raised above another, or that has a right to command another.

SUPERLATIVE, in grammar, one of the three degrees of comparisons, being that inflexion of nouns adjective that serves to augment and heighten their signification, and shews the quality of the thing denoted to be in the highest degree. In English, the superlative is usually formed by the addition of *est* to the positive, as *wisest*, *richest*, &c. and frequently by prefixing *of most*, as *most wise*, *most great*, &c.

SUPERNUMERARY, something over and above a fixed number. In several of the offices are supernumerary clerks, to be ready on extraordinary occasions. There are also supernumerary surveyors of the excise, to be ready to supply vacancies when they fall; these have but half pay. In music, the supernumerary called by the Greeks *proslambanomenos*, is the lowest of the chords of their system, answering to *a*, *mi*, *la*, of the lowest octave of the moderns.

SUPER PURGATION, *Hypercatbasia*, in medicine, an excessive over violent purging, the usual effects of colliquating, corrosive, and stimulating medicines.

SUPERSCAPULARIS INFERIOR, called also *infraspinatus*, a muscle that

helps to draw the arm backwards. It covers all that space that is between the spine and the teres minor, and is inserted in the neck of the humerus.

SUPERSEDEAS, in law, according to Fitzherbert, is a writ which lies in divers cases: and in general signifies a command to stay some of the ordinary proceedings in law, which, on good cause shewn, ought not to proceed. It is likewise used for staying of an execution after a writ of error is allowed, and bail put in, but not before bail is given, in case there be a judgment upon verdict, or by default in debt, &c. A *supersedeas* is also granted by the court for setting aside an erroneous judicial process, &c. And a prisoner may be thereby discharged upon entering his appearance, and on the plaintiff's not filing a declaration against him. For this writ is as good a cause to discharge the person, as the first process is to arrest him. There is a further writ of *supersedeas*, where an *audita querela* is sued and in cases of surety of the peace, when one is already bound to the peace in chancery, or elsewhere.

SUPERSTITION, extravagant devotion, or religion wrong directed, or conducted.

SUPERVISOR, a surveyor, or overseer. It was formerly, and still remains a custom among some persons, to appoint a supervisor of a will, to see that the executors thereof do punctually observe and perform the same. Supervisor formerly was used for surveyor of the highways. There are likewise certain officers of the excise, who are called supervisors, on account of their having the supervising and inspecting of the books, &c. of the inferior officers belonging to that branch of the revenue, to prevent their neglect of duty.

SUPINATORES, in anatomy, are two muscles, the longus and brevis; the first ariseth by a fleshy beginning three or four fingers breadth above the external exuberance of the humerus. It lies all along the radius, to whose inferior and external part it is inserted by a pretty broad tendon; the last comes from the external and upper part of the ulna, and, passing round the radius, it is inserted into its upper and fore-part below the tendon of the biceps. These turn the palm of the hand upwards.

SUPINE, in Latin grammar, a part of the conjugation of a verb, of a like effect with the infinitive mood. There are two kinds of supines, the one in *um*, whose signification

signification is active, and marks a motion, as *data nuptium*; the other in *-u*, having a passive signification, as *hacendum audire*, &c. — The supines have neither number nor person.

SUPPLEMENT of an Arch, in geometry, or trigonometry, the number of degrees that it wants of being an entire semicircle; as a complement signifies what an arch wants of being a quadrant.

SUPPLEMENT, in matters of literature, an appendage to a book, to supply what is wanting therein.

SUPPLICAVIT, a writ issuing out of Chancery, for taking surety of the peace when one is in danger of being hurt in his body by another.

SUPPORTED, in heraldry, a term applied to the uppermost quarters of a shield when divided into several quarters, these seeming as it were supported or sustained by those below. The chief is said to be supported when it is of two colours, and the upper colour takes up two thirds of it. In this case it is supported by the colour underneath.

SUPPORTERS, in heraldry, figures in an achievement placed by the side of the shield, and seeming to support or hold up the same. Supporters are chiefly figures of beasts: figures of human creatures, for the like purpose, are properly called tenants. Some make another difference between tenant and supporter: when the shield is borne by a single animal, it is called tenant: when by two, they are called supporters. The figures of things inanimate sometimes placed aside of escutcheons, but not touching or seeming to bear them, though sometimes called supporters, are more properly callants. The supporters of the British arms are a lion and an unicorn: those of the French arms are angels, &c. In England, none under the degree of a banneret are allowed supporters, which are restrained to those called the high nobility. The Germans permit none but princes and noblemen of rank to bear them: but among the French the use of them is more promiscuous.

SUPPOSITION, in music, is when one of the parts dwells on a note, while another part makes two or more lesser notes equivalent to it, by conjoint degree. See *Harmony*.

SUPPOSITORY, in pharmacy, a kind of medicate cone, or ball, which is introduced to the anus for opening the belly.

SUPPRESSION, in law, the extinc-

tion or annihilation of an office, right, rent, or the like.

SUPPRESSION, in grammar and rhetoric, denotes an omission of certain words in a sentence, which yet are necessary to full and perfect construction: as, "I come from my father's;" that is, "from my father's house."

Suppression is a figure of speech very frequent in our language, chiefly used for brevity and elegance. Some rules relating hereto are as follow: 1. Whenever a word comes to be repeated in a sentence oftener than once, it is to be suppressed. Thus we say, "This is my master's horse," not "This horse is my master's horse." 2. Words that are necessarily supplied may be suppressed: and 3. All words that use and custom suppress in other languages, are also to be suppressed in English, unless there be particular reasons for the contrary.

Suppression is also a figure in speech whereby a person in rage, or other disturbance of mind, speaks not out all he means, but suddenly breaks off his discourse. Thus the gentleman in Terence extremely incensed against his adversary, accosts him with this abrupt saying, "Thou of all!" The excess of his indignation and rage choked the passage of his voice, and would not suffer him to utter the rest. But in these cases, though the discourse is not complete, the meaning is readily understood, and the evidence of the thought easily supplies the defect of words. Suppression sometimes proceeds from modesty, and fear of uttering any word of ill and offensive sound.

SUPPRESSION, in medicine, is generally used for a retention of urine or the menses.

SUPPRESSIONIS IGNTS; a fire of suppression, a term used in chemistry to express such an application of fire to any subject that it shall at once act upon it, both above and below, in the same manner. The usual way of giving this heat is by covering the vessel in which the ingredients are put with sand, and then laying hot coals upon that, so that they may heat through the sand downwards.

SUPPURATION, in medicine and surgery, wherein an inflammation terminates, being a conversion of the inspissated blood and the soft adjacent parts, as the vessels and fat, into pus, or matter: which disorder, when it has not yet found an opening, is generally called an abscess.

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SUPPURATIVES, or **SUPPURATING MEDICINES**, such as promote supuration.

SUPPUTATION. See *Computation*.

SUPRACOSTALES, or **LEVATORIS COSTARUM**, in anatomy, muscles serving to respiration; being among those that dilate the thorax for that end, and therefore reckoned among the dilatores.

SUPRALAPSARY, in theology, a person who holds that God, without any regard to the good or evil works of men, has resolved, by an eternal decree, to save some and damn others. These are also called antelapsaries, and are opposed to sublapsaries and infralapsaries.

SUPRASPINATUS, in anatomy, a muscle thus called from its fleshy origination at the upper end of the basis of the scapula above the spine, to the upper part whereof it is connected, as also to the superior edge of the scapula, whence marching along the upper interscapulum, or thin part of the scapula, which it fills, it passes under the acromium, and articulation of the humerus. It helps to lift the arm upwards.

SUPREMACY, in our polity, the superiority or sovereignty of the king over the church as well as state, whereof he is established head.

The king's supremacy was at first established, or, as others say, recovered, by King Henry VIII. in 1534, after breaking with the pope. It is since confirmed by several canons, as well as by the articles of the church, and is passed into an oath which is required as a necessary qualification for all offices and employments both in church and state, from persons to be ordained, from the members of both houses of parliament, &c.

SURA, in anatomy, the calf, or fleshy part of the leg. The word is also used by some for the fibula.

SURAT, a large sea port town of Asia, in the province of Guzurat, and in the peninsula on this side the Ganges. It was built in 1660, on the banks of the river Tapa, the mart town being then in another place: it is now said to have 200,000 inhabitants. Its trade is now very considerable. In this city there are many different religions, for there are Mahometans of several sects, and many sorts of Gentoos, of which the Banyans are most numerous. These are either merchants, bankers, brokers, accountants, collectors, or surveyors; but there are very few handicraftsmen, ex-

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cept taylors and barbers. The fields about Surat are all plain, and the soil is fertile, except towards the sea, which is sandy and barren. All sorts of provisions are very cheap, and they have as good wheat as in Europe. They have various sorts of fowls, and plenty of antelopes in their forests, though but few deer. There are no fine buildings, but many of the houses are large; and there are caravansaries and mosques. The English and Dutch agents make a figure here, and always have a good understanding with the officers of state and justice. The affairs of the East India company are managed by a president and council; and the former lives in great splendor. The Mahometan women are always veiled when they appear abroad, and their dress is much the same as the men. The Gentoos women are barefaced, and their legs are bare up to the knee. They have several gold and silver rings on their noses, ears, legs, and toes. Surat, together with the citadel, was taken by the English in April 1759, and afterwards ceded to them by the great mogul. It is one hundred and sixty miles north of Bombay. Long. 72. 25. E. Lat. 21. 10. N.

SURBATING, among farriers, is when the sole of a horse's foot is worn, bruised, or spoiled by beating the hoof against the ground in travelling without shoes, or going in hot sandy lands, or with a shoe that hurts the sole, lies too flat to it, or the like. Sometimes also it happens by over-riding a horse while young, before his feet are hardened; and sometimes by the hardness of the ground and high lifting his feet. The signs hereof are his halting on both fore-legs, and going stiffly, and creeping as if half foundered. In the general, there is nothing better for surbated feet than tar melted into the foot, or vinegar boiled with foot to the consistence of a broth, and put into the foot boiling hot, with hurds over it, and splints to keep it in.

SURCHARGE, the same with overcharge, and whatever is above that which is just and right. Surcharge of the forest or a common, is when a commoner puts more beasts in the forest or common than he has a right to do.

SURCINGLE, a girdle wherewith the clergy of the church of England usually tie their cassock.

SURCOAT, a coat of arms to be worn over the body armour. The surcoat is properly

properly a loose thin taffaty-coat, with arms embroidered or painted on it, such as is worn by heralds: anciently also used by military men over their armour, to distinguish themselves by.

SURCULUS, in the anatomy of plants, a word used to express that part of the branching of the ribs of a leaf, which is of a middle kind betwixt the great middle rib and the smallest reticular ramifications. The middle rib is by the writers on these subjects called petiolum. The first division that go off laterally from these are called rami, or branches; the next division of these into more minute ones, furculi; and the final divarications of these into the reticular work that spreads itself over the whole leaf, capillamenta.

SURD, in arithmetic and algebra, implies any number or quantity that is incommensurable to unity; and is otherwise called an irrational number or quantity. If a lesser quantity measures a greater so as to leave no remainder, as $2a$ measures $10a$, being found in it five times, it is said to be an aliquot part of it, and the greater is said to be a multiple of the lesser. The lesser quantity in this case is the greatest common measure of the two quantities; for as it measures the greater, so it also measures itself; and no quantity can measure it that is greater than itself. When a third quantity measures any two proposed quantities, as $2a$ measures $6a$ and $10a$, it is said to be a common measure of these quantities; and if no greater quantity measure them both, it is called their greatest common measure. Those quantities are said to be commensurable which have any common measure; but if there can be no quantity found that measures them both, they are said to be incommensurable; and if any one quantity be called rational, all others that have any common measure with it, are also called rational: but those that have no common measure with it, are called irrational quantities.

SURETY, in law, generally signifies the same with bail. There is also a surety of the peace, whereby a person, in danger of hurt from another, is secured by a bond or recognizance, acknowledged by the other to the king, and bail bound with him for keeping the peace.

SURFEIT, in medicine, a sickness proceeding from the sensation of a load at the stomach, usually attended with eruptions, and sometimes with a fever.

Surfeits may be caused, says Dr. Shaw, 1. By voracity; from whence the stomach and intestines are overcharged, digestion weakened, and the chyle rendered crude or viscid, and the blood corrupted. If what was thus devoured were high seasoned or inflammatory, or happened to lie longer in the body, it is supposed to cause a fever also. 2. By drinking of small liquors in hot weather, or when the body is heated by exercise; which, perhaps, chills the fluids, and gives a check to perspiration; from whence also may arise a fever and eruptions. Summer fruits likewise, as cucumbers, apples, cherries, &c. may have the same effect. 3. By too great exercise or heat, whence the fluids are rarified and thrown into too rapid a circulation, which being suddenly stopped, as may happen by cooling too fast, there ensues also a stoppage of perspiration. 4. By the state or some change of the air; as by blasts, or vehemently hot and sultry weather, or cold winds giving a check to, and preventing perspiration.

Eruptions may not appear in surfeits, either by reason of the slightness of the cause, or some wrong management at the first. Nauseas, oppression, sickness, and sometimes a vomiting and a fever, but seldom eruptions, attend on an overloaded stomach. This species of a surfeit is called *crapula*; sickness, gnawing at the stomach. Sometimes eruptions and a fever attend surfeits, from the bad quality of any thing used as food. The fever always decreases as the eruptions increase; and if these suddenly disappear, the fever increases. Those surfeits, which proceed from too great exercise, or too sudden cooling after it, appear with sickness, a fever and eruptions, though the two last may be wanting. Those caused from some alteration in the air, and vulgarly called blasts, appear with redness of the face, spots, and a fever, often with blisters on the skin.

SURGERY, or **CHIRURGERY**. See *Chirurgery*.

SURMOUNTED, in heraldry, is when one figure is laid over another.

SURNAME, or **SIRNAME**, a name added to the proper or baptismal name, to denominate the person of such a family.

SURREBUTTER, in law, a second rebutter, or the replication of the plaintiff to the defendant's rebutter.

SURRENDER, in common law, an instrument

instrument in writing, testifying that the particular tenant of lands and tenements for life, or years, doth sufficiently consent and agree, that he who has the next or immediate remainder or reversion thereof, shall have the present estate of the same in possession, and that he hereby yields and gives up the same to him.

SURRY, a county of England, bounded, on the north by Middlesex, on the east by Kent, on the south by Sussex, and on the west by Berkshire and Hampshire. It is thirty-four miles in length, and twenty-three in breadth. It contains 140 parishes, and eleven market-towns, and the air is sweet and delightful. The principal rivers are the Thames, the Wey, the Mole, and the Wandle; six of the towns send two members to parliament, which, with two for the county, make fourteen in all. The principal towns are, Southwark, Guildford, Kingston, and Croydon.

SURSOLID, or **SURDESOLID**, in arithmetic and algebra, the fifth power, or fourth multiplication of any number or quantity considered as a root.

SURSOLID PROBLEM, in mathematics, is that which cannot be resolved but by curves of a higher nature than a conic section; v. gr. in order to describe a regular endecagon, or figure of eleven sides in a circle, it is required to describe an isosceles triangle on a right line given, whose angles at the base shall be quintuple to that at the vertex; which may easily be done by the intersection of a quadratrix, or any other curve of the second gender.

SURVEYING, the art or art of measuring lands; i. e. of taking the dimensions of any tract of ground, laying down the same in a map or draught, and finding the content or area thereof. Surveying, called also geodæsia, is a very ancient art; it is even held to have been the first or primitive part of geometry, and that which gave occasion to, and laid the foundation of all the rest. Surveying consists of three parts or members; the first is the taking of the necessary measures, and making the necessary observations on the ground itself: the second is the laying down of these measures and observations on paper; and the third, the finding the area or quantity of the ground thus laid down. The first is what we properly call surveying; the second we call plotting or protracting, or mapping; and the third casting up. The first, again, consists of two parts, viz.

the making of observations for the angles, and the taking of measures for the distances. The former of these is performed by some one or other of the following instruments, viz. the theodolite, circumferentor, semi-circle, plain-table, or compass: the description and manner of using each whereof, see under its respective article. The latter is performed by means either of the chain or the perambulator: the description and manner of applying each whereof, see under its respective article. The second branch of surveying is performed by means of the protractor, and plotting scale. See *Plotting*.

The third is performed by reducing the several divisions, inclosures, &c. into triangles, squares, trapeziums, parallelograms, &c. but especially triangles; and finding the areas or contents of these several figures.

SURVEYOR, one that hath the oversight and care of considerable works, lands, or the like. Such are the surveyor-general of the king's manors, surveyor of the king's exchange, surveyor-general of the works, surveyor-general of the crown lands, &c.

SURVEYOR of the Mint, is an officer of the mint, whose office is to see the bullion cast out, and that it be not altered after the delivery of it to the melter.

SURVEYOR of the Navy, an officer whose business is to know the state of all stores, and see the wants supplied; to survey the hull, masts, and yards of ships; to audit the boatswains and carpenters accounts, &c.

SURVEYOR of the Ordnance, is an officer whose charge is to survey all the king's ordnance, stores, and provisions of war, in custody of the store-keeper of the Tower of London; to allow all bills of debts, to keep checks on labourers and artificers work, &c.

SURVEYOR, is also used for a gauger. And also for a person who measures and makes maps of land.

SUSPENSION, in mechanics, are those points in the axis or beam of a balance, wherein the weights are applied, or from which they are suspended.

SUSPENSION of Arms, in war, is a short truce which the contending parties agree on, for the burial of their dead, the waiting for succours, or the order of their matters, &c.

SUSPENSION, in rhetoric, is the carrying on a period or discourse, in such a manner as to keep the reader in expectation

tion of something considerable in the conclusion. But great care must be taken, that the reader's expectation be not disappointed; for nothing is more contemptible than to promise much and perform little, or to usher in an arrant trifle with the formality of preface and solemn preparation.

SUSPENSOR, in anatomy, the same with the cremaster muscle. See *Cremaster*.

SUSPICION, in law. Persons may be taken up upon suspicion, where a felony is committed, &c. however, there must be at least some reasonable grounds for the same.

SUSSEX, a county of England, bounded on the north by Surrey and Kent, on the east by another part of Kent, on the south by the English channel, and on the west by Hampshire; being about sixty-five miles in length, and twenty-nine in breadth. It contains seventeen market-towns, and nine of them send members to parliament, as also the three cinque ports, Hastings, Winchelsea, and Scaford, which, with two knights of the shire, make twenty-six members in all. The chief rivers are the Arun and the Rother; which empty themselves into the sea. The chief town is Chichester.

SUTURE, *Sutura*, in anatomy, a particular articulation. The bones of the cranium are joined to one another by four sutures. The first is called the coronalis. It reaches transversely from one temple to the other. It joins the os frontis to the ossa parietalia and petrosa. The second is called lambdoidalis, because it resembles the Greek letter (Λ) lambda. It joins the os occipitis to the ossa parietalia and petrosa. The third is called squamosalis; it begins at the top of the lambdoidalis, and runs straight to the middle of the coronalis. It joins the two ossa parietalia together. The fourth is called sutura squamosa, because the parts of these bones which are joined by this suture are as it were cut slopewise and lapped over one another. This suture joins the semicircular circumference of the ossa temporum to the os sphenoides occipitis, and to the ossa parietalia. The first three sutures were called *suturae verae*; and the last sutura falsa, because it was supposed to have no indentations, which is false. The bones of the cranium are not only joined to one another, but they are also joined to the bones of the upper jaw by three other sutures. The first is the transversalis; it runs across the face, it

passes from the little angle of the eye down to the bottom of the orbit, and up again by the great angle of the eye, over the root of the nose, and so to the little angle of the other eye. It joins the os frontis to the bones of the upper jaw. The second is the ethmoidalis; it surrounds the bone of that name, and joins it to the bones which are about it. The third is the sutura sphenoidalis; it surrounds the os sphenoides, joins it to the os occipitis, the ossa petrosa, and the os frontis.

SUTURE, in chirurgery, a seam made to close the lips of a wound, in order to its healing.

SWALLOW'S TAIL, in fortification, a kind of out-work, only differing from a single tenaille, in that its sides are not parallel as those of the tenaille, but narrower, towards the fortified place, than towards the country.

SWALLOW'S TAIL, in carpentry and joinery, a peculiar way of fastening together two pieces of timber so strongly as they cannot fall asunder. See *Dove-tail* &c.

SWARDY, in agriculture, an appellation given to lands well covered with grass.

SWATH, in surgery, a long and broad bandage, for binding up any disordered limb. See *Bandage*.

SWEAT, a sensible moisture issuing out of the pores of the skins of animals, through too much heat, exercise, or weakness, or through the action of certain medicines called sudorifics. Under the skin above the fat are disposed all over the body what we call the millitary glands, which are closely united, each gland furnished with an artery, vein, and nerve, and produce an excretory duct or vessel, which passes through a perforation in the reticular body, and discharges, through a wide orifice, the sweat under the epidermis. These ducts are covered with a hollow and raised valve of a round figure, and seated under the skin; its use is to transmit or restrain the humour. This excretory duct is the principal organ of sweat, in conjunction with the valvulae Rhycheiana. The sweat thus secreted varies according to the differences of air, soil, sex, age, temperament, emunctories, diet, way of living, and time of concoction; almost in the same manner as does the urine.

Sweat is seldom or never observed in a sound body, unless from an error of the non-naturals; in its primary effects it is always hurtful, by accident it sometimes proves beneficial. See *Perpiration*.

SWEAT-

SWEATING SICKNESS. See the article *Sudor Anglicanus*.

SWEATING-HOUSE. The natives of North America, when we first settled among them, had a great many houses to sweat in, it being their general remedy for diseases of whatever kind; but at present they are less used among them.

The cave, or sweating-house, was usually eight feet in diameter, and four feet high, the roof being supported by sticks or boards. They usually dug these caves in the side of a hill, and as near as could be to some river, or pond. The entrance into the cave was small, and when any person was sweating in it, the door was covered with a blanket, or skin. Near the cave they used to make a large fire, and heat in this a quantity of stones, perhaps five hundred weight; these they rolled into the cave, and piled up in a heap in the middle. When this is done, the Indians go in naked, as many as please, and sit round the heap of stones; and as soon as they begin to grow faint, which is usually in a quarter of an hour, they come out, and plunge themselves all over in the water, remaining in it a minute or two; and, repeating this a second time, they dress themselves, and go about their business. This has been used for many ages among them with success, in case of colds, surfeits, sciaticas, and pains fixed in their limbs; and the English have often used the same means, and found relief by it. It is practised equally at all times of the year, and the Indians do it not only in sicknesses, but by way of refreshment after long journeys, and other fatigues, and to strengthen themselves for any expeditions. *Philos. Transf.* No. 384.

* **SWEDEN**, an extensive kingdom in the north of Europe, bounded on the north by Danish Lapland and by the ocean, on the south by the Baltic Sea and the gulph of Finland, and on the west by Norway, the Sound, and the Cattegat. It is about eight hundred miles in length from north to south, and three hundred and fifty in breadth from east to west. It is divided into Sweden Proper, Gothland, Nordland, Finland, and Lapland. It is part of the country anciently called Scandinavia. The climate is not every where the same; for on the side of Muscovy, the longest day is eighteen hours thirty minutes; but farther towards the north, and near the pole, there is but one day and one night throughout the year. In the province in

which Stockholm is seated, the spring and autumn is scarce to be perceived, for the winter continues nine months, and the summer the remaining three. In winter the cold is excessive, and in summer the heat is almost insupportable, the air being serene all that time. Notwithstanding this, the Swedes live a long while; and it is not uncommon to see ten people together at the same table, whose ages make up a thousand years. Those places that are fit for cultivation have scarce a foot of good earth, for below it is all gravel; for which reason they till the ground with a single ox, and one servant may readily manage the plough. All their rocks are covered with flowers in the summer time, and their gardens have plenty of fruit. Their domestic animals are, horses, cows, hogs, goats, and sheep. With regard to the wild beasts, there are bears, wolves, foxes, wild cats, and squirrels. In winter the foxes and squirrels become grey, and the hares as white as snow. There are also elks and reindeer. They have several sorts of fowl, and partridges, woodcocks, and falcons, in great plenty. The silver mines are two hundred yards in depth; and though they are rich, yet the people who work them have scarce wherewith to subsist, when the king's duties are paid. The mines of copper are also exceeding good; likewise the iron mines yield a great deal of iron. The Swedes did not apply to navigation till the year 1644, when their vessels had liberty to pass through the Sound without paying any toll. The merchandize which the Swedes supply foreigners with are boards, gunpowder, leather, iron, copper, tallow, skins, pitch, rosin, masts, and all sorts of wooden utensils; and, on the contrary, they are obliged to purchase salt, brandy, wine, linen cloth, trade stuffs, tobacco, sugar, spices, and paper. However, the trade has been greatly hurt by the Russians having seized Livonia, which was the granary of Sweden; and now, in scarce years, they are obliged to purchase corn and provisions of the Russians with ready money; besides, in 1721, their vessels were obliged to pay the same toll as other nations for passing the Sound; however, in 1731, they set up an East India Company at Gottenburg; and as that harbour is without the Sound, the merchandizes brought from the East Indies come duty free. The inhabitants are of a robust constitution, and are able to sustain the hardest labour. They are

much more polished than what they were, and have several public schools and colleges, where arts and sciences are taught. Their houses are generally of wood, and have very little art in their construction. There is no country in the world where the women do so much work, for they till the ground, thrash the corn, and row the boats on the sea. The government of Sweden was always monarchical, and was formerly elective; but afterwards became hereditary, and is now despotic. The whole country is divided into twenty-five governments. The Swedes profess the evangelical religion, and will not tolerate any other in their kingdom. They have one archbishop and seven bishops, besides six superintendants, and they must be all, as well as the inferior clergy, natives of the country.

SWEET, in the wine trade, denotes any vegetable juice, whether obtained by means of sugar, raisins, or other foreign or domestic fruit, which is added to wines, with a design to improve them. It is plain, says Dr. Shaw, from the making of artificial must, or stum, by means of fine sugar, with a small addition of tartar, that the art of sweet-making might receive a high degree of improvement, by the using pure sugar as one general wholesome sweet, instead of those infinite mixtures of honey, raisins, syrups, treacle, stum, cyder, &c. where-with the sweet-makers supply the wine-coopers, to lengthen out or amend their wines: for pure sugar being added to any poor wine, will ferment therewith, and improve it, and bring it to a proper degree of strength and vinosity. If the wine that is to be amended is tart of itself, no tartar should be added to the sugar; but if it be too sweet and luscious then the addition of tartar is necessary.

SWEET-SUBLIMATE of Mercury, the same with mercurius dulcis. See *Mercury* and *Calomel*.

SWELLING, in surgery. See *Inflammation* and *Tumour*.

SWIFT, Dr. JONATHAN, a celebrated wit, poet, and political writer, was born in Dublin, on November 30, 1667; but both his father and mother were natives of England. At about six years of age, he was sent to the school of Kilkenny, and having continued there eight years, was admitted a student of Trinity college, Dublin, where applying himself to books of history and poetry, to the neglect of academical learning, he was, at the end of four years, refused his

degree of bachelor of arts for insufficiency, and was at last admitted *specialis gramo*, which is there considered as the highest degree of reproach and dishonour. Stung with this disgrace, he studied eight hours a day for the seven following years, three of them at the university of Dublin. He had lost his father when he was but about a year old, and, in 1688, was deprived of his uncle, by whom he had been supported; he therefore came to England, and took a journey to Leicester, where his mother resided, in order to consult her about the course he was to pursue. As Sir William Temple had married a lady to whom Mrs. Swift was related, she advised her son to communicate his situation to that gentleman, and solicit his advice. Sir William received him with great kindness, and Swift's first visit continued two years, during which time he assisted his patron in revising his works; and from his conversation Swift greatly increased his political knowledge; but suspecting that Sir William neglected to provide for him, merely that he might keep him in his family, he resented it so warmly, that in 1694 a quarrel ensued, and they parted. Having taken orders, he obtained the prebend of Kilroor, in the diocese of Connor, in Ireland, worth about 100 l. per annum. But Sir William, who had been used to his conversation, was unwilling to live without him, and therefore persuaded him to resign his prebend in favour of a friend, promising to obtain preferment for him in England, if he would return. Swift consented, and Sir William was so pleased, that during the remainder of his life, which was about four years, the utmost harmony subsisted between them. Swift, as a testimony of his esteem, wrote the *Battle of the Books*, of which Sir William was the hero; and Sir William, when he died, left him a pecuniary legacy, and his posthumous works. He is said to have been devout, not only in his public, but private devotions; yet he could not forbear, when an opportunity offered, of indulging the peculiarity of his humour, however improper the time and place. Upon his coming to Laracor, a living to which he had been preferred, he gave public notice, that he would read prayers on Wednesdays and Fridays, which had not been customary there. Accordingly the bell was rung, and he entered the desk; but having sat some time with no other auditor than his clerk Roger, he began, "Dearly be-

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loved Roger, the Scripture moveth you and me in sundry places;" and so proceeded to the end of the service. Thus, also, soon after he was dean of St. Patrick's, having dined one Sunday with Dr. Raymond, vicar of Trim, when the bells had done ringing for evening prayers, "Raymond," said Swift, "I will lay you a crown that I begin prayers before you this afternoon." Dr. Raymond accepted the wager, and immediately both ran as fast as they could to the church. Raymond, the nimblest of the two, arrived first at the door, and entering the church, walked decently towards the reading desk; but Swift, without slackening his pace, ran up the aisle, left Raymond behind him, and stepping into the desk, without putting on the surplice, or opening the book, in an audible voice began the service.

While Swift resided at Laracor, he invited to Ireland a lady, whom he has celebrated by the name of Stella. He became acquainted with her while he lived with Sir William Temple. She was the daughter of his steward, whose name was Johnson; and Sir William, in consideration of her father's faithful services, left her at his death 1000*l*. She was now about eighteen, and was accompanied by Mrs. Dingley, a lady who was fifteen years older, but, though she was related to Sir William, had only an annuity of 27*l*. But whatever was Swift's attachment to Mrs. Johnson, every precaution was taken to prevent scandal: they never lived in the same house; nor were they ever known to meet but in the presence of a third person. Swift made frequent excursions; but Mrs. Johnson was buried in solitude and obscurity; she was personally known only to a few of Swift's most intimate acquaintance, and Mrs. Dingley was her only female companion. In 1701 Swift took his degree of doctor of divinity. He had been educated among the Whigs, and the same year published a Discourse of the Contests and Dissensions between the Nobles and Commons of Athens and Rome: this was in behalf of king William and his ministers, against the violent proceedings of the house of commons. But soon after he attached himself to the Tories. In 1710, being then in England, he was impowered by the primate of Ireland to solicit the queen to release the clergy from paying the twentieth part, and the first fruits; on which he resolved to apply to Mr. Harley; but before he waited

on him, got himself represented as a person who had been ill used by the last ministry, for not going such lengths as they would have had him. Mr. Harley received him with the utmost kindness and respect, and soon after accomplished his business. Swift presently became acquainted with the rest of the ministers, by whom he was caressed, and dined every Saturday at Mr. Harley's with the lord-keeper, Mr. Secretary St. John, and lord Rivers. This select company was at length increased to sixteen, Swift included; and from this time he supported the interest of his new friends in pamphlets, poems, and periodical papers. In order to facilitate a peace, which appeared necessary to save the ministry from ruin, he wrote the Conduct of the Allies, which cost him much pains; but succeeded beyond his expectation, above 11,000 being sold off in two months time. But in the mean while he received no gratuity or reward till the year 1713, when he was presented to the deanery of St. Patrick's, Dublin.

The first remarkable event after his settlement at the deanery was his marriage to Mrs. Johnson, after a most intimate friendship of above sixteen years. But whatever were the motives of this marriage, the dean and the lady continued to live afterwards in the same manner as before. Mrs. Dingley was still her inseparable companion, and she never resided at the deanery, except when the dean had fits of giddiness and deafness. About the year 1720 the dean, who had before acquired the character of a humourist and wit, was first regarded as the patriot of Ireland, by writing a Proposal for the use of the Irish Manufactures, which rendered him the more popular, as it immediately raised so violent a flame, that a prosecution was commenced against the printer; and in 1724 he published the Drapier's Letters, which united the whole nation in his praise, and his influence in Ireland became almost without bounds: he was consulted in whatever related to domestic policy, and particularly to trade: the weavers considered him as their patron and legislator; and when elections were depending for the city of Dublin, many corporations refused to declare themselves, till they knew his sentiments. He was an absolute monarch over the populace, and was regarded with veneration and esteem by persons of every rank. On the 28th of January, 1727, died his wife, the amiable

amiable Stella, in the 44th year of her age, a lady possessed of an enchanting beauty, a musical voice, unbounded wit, mingled with sweetness of manners, and a mind adorned with every virtue. She had been declining ever since the year 1724, and it is generally agreed, that her immature death was occasioned by the peculiarity of the dean's conduct towards her. From his time this life became much retired, and the austerity of his temper increased. But as he spent great part of his time in solitude, he frequently amused himself with writing. However, though his principal enjoyment was at an end when she died, it is remarkable, that there is an air of levity and trifling in several of the pieces he wrote afterwards; such in particular are several of his Letters to Dr. Sheridan, and his Directions to Servants. From the year 1736 his memory was perceived gradually to decline, and his passions to pervert his understanding. In 1741 he was incapable of conversation, and his friends found it necessary to appoint him guardians. In the beginning of the year 1742 his reason was subverted, and his rage became absolute madness. In October his left eye swelled to the size of an egg, and large boils breaking out on his arms and body, pain kept him awake near a month, and during one week, five persons with difficulty restrained him by mere force, from pulling out his eyes. Upon the subsiding of these tumours, he knew those about him; but a few days after sunk into a state of total insensibility, and could not, without great difficulty, be prevailed on to walk across the room, and thus continued, scarcely uttering above half a dozen sentences till his death, which happened in the latter end of October, 1745, without the least pang or convulsion, in the seventy-eight year of his age.

By his will he left about 1200*l.* in legacies; and the rest of his fortune, which amounted to about 11,000 to erect and endow an hospital for idiots and lunatics.

SWIMMING, the art or act of sustaining the body in water, and of moving therein; in which action the air-bladder and fins of fishes bear a considerable part.

Brutes swim naturally, but men attain this art by practice and industry: it consists principally in striking alternately with the hands and feet; which, like oars, row a person forward: he must

keep his body a little oblique, that he may the more easily erect his head, and keep his mouth above water.

SWINE, in zoology, a general name for the sus or hog-kind. See *Hog*.

SWINGLING, the beating of flax, or hemp, after it has been well broken with the brake: this is done by taking up the flax in handfuls, and then beating it with a rod, or a flatted and smooth stick, in order to free it from the bun, and prepare it for being heckled.

* **SWISSERLAND**, or **SWITZERLAND**, a country in Europe, bounded on the east by Tyrol, on the west by the Franche Compté, on the north by Sontgaw, the Black Forest, and a part of Suabia; and on the south by Savoy, Milanese, and other provinces of Italy. It is about two hundred and seventy miles in length, and one hundred in breadth. Swisserland is divided into thirteen cantons, without comprehending their allies, namely Lucern, Uri, Schwitz, Underwald, Zug, Friburg, Soleure, the Catholic cantons; and the Protestant cantons Zurich, Bern, Basil, and Schaffhausen; with Glaris and Appenzill, which contain both religions. All these cantons are so many republics; and it was the cantons of Schwitz, Uri, and Underwald, which began to throw off the Austrian yoke in 1308. The mountains of Swisserland, commonly called the Alps, are a long chain of prodigious height, which begin at the Mediterranean, and extend to the Adriatic. The principal lakes are those of Constance, Geneva, Lucern, Zurich, and Neuf-Chatel. The most considerable rivers are the Rhine, the Rhone, the Aar, the Rues, and the Inn. The principal riches of Swisserland consist of excellent pastures, in which they breed and fatten their cattle night and day on the mountains: one would think they would be devoured by the wild beasts, and yet it is quite otherwise; for when the bees perceive a bear, or a wolf, at a distance, they form themselves into a circle, and are ready to receive the enemy with their horns. As for the goats, and shamoy goats, they feed in flocks on the mountains and in the woods, and they place centinels on all sides; and when any dangerous animal draws near, a signal is given, and they all get into a place of refuge, where the savage beast dares not come. The inhabitants are strong robust men, for which reason they are generally chosen by several nations for the military

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service, and even the pope has his Swift guards.

SWOONING, in medicine, a species of lipothymy, wherein the patient is deprived of all sense and motion. See *Lipothymia*.

SWORD, an offensive weapon worn at the side, and serving either to cut or stab; its parts are the handle, guard, and blade; to which may be added the bow, scabbard, pommel, &c. Fencing-masters, however, divide the sword into the upper, middle, and lower part; or the fort, middle, and foible. See *Fencing*.

SYCAMORE-TREE, in botany, the English name of the acer major, or greater maple. See *Maple*.

SYCOPHANT, a Greek term originally used at Athens for persons who made it their business to inform against those who stole figs, or against those who, contrary to the law, which prohibited the exportation of them, practised the thing; and deceived the officers, the inspectors of the ports, &c. At length the term became used in the general for all informers, tale-bearers, parasites, flatterers, &c. especially those in the courts of princes: and at last for liars, impostors, &c.

SYLLABLE, in grammar, or part of a word consisting of one or more letters which are pronounced together. Or syllable is a complete word, uttered in one breath, consisting either of a vowel alone, or of a vowel and one or more consonants, not exceeding seven.

SYLLABUB, a compound liquor made of white wine and sugar, into which is put new milk. If cream be used instead of milk, it is called whipt syllabub.

SYLLABUS, in matters of literature, denotes a table of contents, or an index of the chief heads of a book or discourse.

SYLLEPSIS, in Latin and Greek grammar, a figure whereby we conceive the sense of words otherwise than the words import; and thus make our construction, not according to the words, but the intention of the author.

SYLLOGISM, in logic, an argument, or form of reasoning, consisting of three propositions; having this property, that the conclusion necessarily follows from the two premises: so that if the first and second proposition be granted, the conclusion must be granted in like manner, and the whole allowed for a demonstra-

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tion. As the first work of the mind is perception, whereby our ideas are framed, and the second is judgment, which joins or disjoins our ideas, and forms a proposition. So the third operation of the mind is reasoning, which joins several propositions together, and makes a syllogism, that is, an argument whereby we are wont to infer something that is less known, from truths which are more evident.

Simple syllogisms are adorned and surrounded in the common books of logic with a variety of inventions about moods and figures, wherein by the artificial contexture of the letters A, E, I, and O, men have endeavoured to transform logic, or the art of reasoning, into a sort of mechanism, and to teach boys to syllogise, or frame arguments and refute them, without any real, inward knowledge of the question.

All the possible compositions of three of the letters, A, E, I, O, to make three propositions amount to sixty-four; but fifty-four of them are excluded from forming true syllogisms the remaining ten are variously diversified by figures and moods into fourteen syllogisms.

The figure of a syllogism is the proper disposition of the middle term with the parts of the question. A mood is the regular determination of propositions according to their quantity and quality, that is, their universal or particular affirmation or negation; which are signified by certain artificial words wherein the consonants are neglected, and these four vowels, A, E, I, O, are only regarded. They are generally reckoned three figures.

In the first of them the middle term is the subject of the major proposition, and the predicate of the minor. This contains four moods, viz Barbara, Celarent, Darii, Ferio. And it is the excellency of this figure that all sorts of questions or conclusions may be proved by it, whether A, E, I, or O, that is, universal or particular, affirmative or negative, as,

Bar-	Every wicked man is truly miserable;
ba-	All tyrants are wicked men;
ra-	Therefore all tyrants are truly miserable.
Ce-	He that is always in fear is not happy;
la-	Covetous men are always in fear;
rent.	Therefore covetous men are not happy.

Da-

Da- Whatsoever furthers our salvation
is good for us;

ri- Some afflictions further our salva-
tion;

li- Therefore some afflictions are good
for us;

Fe- Nothing that must be repented of
is truly desirable;

ri- Some pleasure must be repented
of;

o- Therefore there are some pleasures
which are not truly desirable.

In the second figure the middle term is
the predicate of both the premises; this
contains four moods, viz. Cesare, Camestres, Festino, Baroco, and it admits
only of negative conclusions; as,

Ce- No liar is fit to be believed;

fa- Every good Christian is fit to be
believed;

re- Therefore no good Christian is a
liar.

The reader may easily form examples
of the rest.

The third figure requires that the mid-
dle term be the subject of both the premi-
ses. It has six moods, viz. Darapti, Fe-
lapton, Disamis, Datissi, Bocardo, Feri-
son; and it admits only of particular
conclusions; as

Da- Whosoever loves God shall be
saved;

rap- All the lovers of God have their
imperfections;

ti- Therefore some who have imper-
fections shall be saved.

From what has been already said, we
shall leave the reader to form examples
of the rest.

Complex SYLLOGISMS.—It is not the
mere use of complex terms in a syllogism
that gives it this name, though one of
the terms is usually complex; but those
are properly called complex syllogisms,
in which the middle term is not connected
with the whole subject, or the whole
predicate in two distinct propositions,
but is intermingled and compared with
them by parts, or in a more confu-
sed manner, in different forms of speech;
as,

The sun is a senseless being;

The Persians worshiped the sun;

Therefore the Persians worshiped a
senseless being.

Here the predicate of the conclusion is
worshiped a senseless being, part of which
is joined with the middle term sun in the
major proposition, and the other part in
the minor.

Though this sort of argument is con-
fessed to be entangled, or confused, and
irregular, if examined by the rules of
simple syllogisms; yet there is a great
variety of arguments used in books of
learning, and in common life, whose
consequence is strong and evident, and
which must be ranked under this head,
as,

1. Exclusive propositions will form a
complex argument; as, "Pious men
are the only favourites of heaven; true
Christians are favourites of heaven; there-
fore true Christians are pious men." Or, thus, "Hypocrites are not pious
men; therefore hypocrites are no favour-
ites of heaven."

2. Exceptive propositions will make
such complex syllogisms; as, "None
but physicians came to the consultation;
the nurse is no physician: therefore the
nurse came not to the consultation."

3. Comparative propositions; as,
"Knowledge is better than riches; vir-
tue is better than knowledge; therefore
virtue is better than riches." Or, thus,
"A dove will fly a mile in a minute;
a swallow flies swifter than a dove; there-
fore a swallow will fly more than a mile
in a minute."

4. Inceptive and desitive propositions;
as, "The fogs vanish as the sun rises;
but the fogs have not yet begun to vanish;
therefore the sun is not yet risen."

5. Modal propositions; as, "It is
necessary that a general understands the
art of war; but Caius does not under-
stand the art of war; therefore it is ne-
cessary Caius should not be a general:
Or thus, A total eclipse of the sun would
cause darkness at noon; it is possible
that the moon at that time may totally e-
clipse the sun; therefore it is possible that
the moon may cause darkness at noon."

Beside all these, there are a great num-
ber of complex syllogisms which can hard-
ly be reduced under any particular titles,
because the forms of human language are
so exceeding various.

Conjunctive SYLLOGISM. Those are
called conjunctive syllogisms wherein one
of the premises, namely the major, has
distinct parts, which are joined by
conjunction, or some such particle of
speech. Most times the major or minor,
or

or both, are explicitly compound propositions; and generally the major proposition is made up of two distinct parts of propositions, in such a manner, as that by the assertion of one in the minor, the other is either asserted or denied in the conclusion: or by the denial of one in the minor, the other is either asserted or denied in the conclusion. It is hardly possible indeed to fit any short definition to include all the kinds of them; but the chief amongst them are the conditional syllogism, the disjunctive, the relative, and the connexive.

The conditional or hypothetical syllogism is whose major or minor, or both, are conditional propositions; as, "If there be a God, the world is governed by providence; but there is a God; therefore the world is governed by providence."

These syllogisms admit two sorts of true argumentation, where the major is conditional.

1. When the antecedent is asserted in the minor, that the consequent may be asserted in the conclusion; such in the preceding example. This is called arguing from the position of the antecedent to the position of the consequent.

2. When the consequent is contradicted in the minor proposition, that the antecedent may be contradicted in the conclusion; as, "If atheists are in the right, then the world exists without a cause; but the world does not exist without a cause; therefore atheists are not in the right." This is called arguing from the removing of the consequent to the removing of the antecedent.

To remove the antecedent or consequent here does not merely signify the denial of it, but the contradiction of it; for the mere denial of it by contrary proposition will not make a true syllogism, as appears thus: "If every creature be reasonable, every brute is reasonable; but no brute is reasonable; therefore no creature is reasonable." Whereas if you say in the minor, but "Every brute is not reasonable," then it would follow truly in the conclusion, therefore "Every creature is not reasonable."

When the antecedent or consequent are negative propositions they are removed by an affirmative; as, "If there be no God, then the world does not discover creating wisdom; but the world does not discover creating wisdom; therefore there is a God." In this instance, the consequent is removed or contradicted in the minor,

that the antecedent may be contradicted in the conclusion. So in this argument of St. Paul, 1 Cor. xv. "If the dead rise not, Christ died in vain; but Christ did not die in vain; therefore the dead shall rise."

A disjunctive syllogism is when the major proposition is disjunctive; as, "The earth moves in a circle or an ellipsis; but it does not move in a circle; therefore it moves in an ellipsis."

A disjunctive syllogism may have many members or parts; thus, "It is either spring, summer, autumn, or winter; but it is not spring, autumn, or winter; therefore it is summer."

The true method of arguing here is from the assertion of one, to the denial of the rest, or from the denial of one or more, to the assertion of what remains; but the major should be so framed, that the several parts of it cannot be true together, though one of them is evidently true.

A relative syllogism requires the major proposition to be relative; as, "Where Christ is, there shall his servants be; but Christ is in heaven; therefore his servants shall be there also." Or, "As is the captain, so are his soldiers; but the captain is a coward; therefore his soldiers are so too."

Arguments that relate to the doctrine of proposition, must be referred to this head; as, "As two are to four, so are three to six; but two make the half of four; therefore three make the half of six."

Besides these, there is another sort of syllogism which is very natural and common, and yet authors take very little notice of it, call it by an improper name, and describe it very defectively, and that is,

A connexive syllogism. This some have called copulative; but it does by no means require the major to be a copulative nor a compound proposition; but it requires that two or more ideas be so connected either in the complex subject or predicate of the major, that if one of them be affirmed or denied in the minor, common sense will naturally shew us what will be the consequence. It would be very tedious and useless to frame particular rules about them: let therefore these two observations be sufficient. 1. Most of them may be transformed into categorical syllogisms by those who have a mind to prove the truth of them that way; or they may be easily converted into each other by changing the forms of speech.

2. These conjunctive syllogisms are seldom

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dom deficient or faulty in the form of them; for such a deficiency would be discovered at first glance generally by common reason, without any artificial rules of logic: the chief cure therefore is to see that the major proposition be true, upon which the whole force of the argument usually depends.

Compound SYLLOGISMS We properly call those compound syllogisms which are made of two or more single syllogisms, and may be reduced into them. The chief kinds are these, Epichirema, Dilemma, Prosylogismus, and Sorites. See each under their proper heads. *Watts's Logic.*

*** SYLVANUS**, in pagan worship, a rural deity, who presided over the woods, forests, and flocks, and who is frequently seen in the train of Bacchus. Some represent him as the son of Saturn, and others, of Faunus; while others again have supposed, that Pan, Faunus, and Sylvanus, were only several appellations of the same deity.

SYMBOL, a sign or representation of any moral thing by the images or properties of natural things.

SYMMETRY, relation of parity both in respect of height, length, and breadth of parts necessary to compose a beautiful whole.

SYMPATHETIC, something that has a sympathy, or that acts, or is acted on by sympathy.

Sympathetic is also particularly applied to all diseases which have two causes, the one remote, and the other near.

SYMPATHY, an agreement of affections and inclinations, or a conformity of natural qualities, humours, temperaments, &c. which make two persons delighted and pleased with each other. In medicine, sympathy denotes an indisposition befalling one part of the body, through the defect or disorder of another; whether it be from the affluence of some humour, or vapour sent from elsewhere; or from the want of the influence of some matter necessary to its action.

SYMPHONY, in music, properly denotes a consonance or concert of several sounds agreeable to the ear, whether vocal or instrumental, called also harmony.

SYMPHYSIS, in anatomy, one of the kinds of junctures, or articulation of the bones. See *Articulation*.

SYMPOSIARCH, in antiquity, the director or manager of an entertainment.

SYMPTOM, in medicine, any ap-

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pearance in a disease, which serves to indicate or point out its cause, approach, duration, event, &c.

SYMPTOM, in a large acceptation, signifies whatever preternaturally befalls a person, whether it be a disease, a morbid cause, or supervening preternatural accident. In a strict sense it means no more than the third or last species; that is, the consequences of diseases, and of their causes, exclusive of the diseases and causes themselves, and so is no other than a preternatural affection, which follows the disease, as the shadow follows the body.

SYMPTOMATICAL, in medicine, a term often used to denote the difference between the primary and secondary causes in diseases. As a fever from pain is said to be symptomatical, because it rises from pain only, and therefore the ordinary means in fevers are not in such cases to be had recourse to, but to what will remove the pain; for, when that ceases, the fever will cease without any direct means taken for it.

SYNAGOGUE, a particular assembly of Jews met to perform the offices of their religion. Also the place wherein they meet.

SYNALOEPHA, in grammar, a contraction of syllables, performed principally by suppressing some vowel or diphthong at the end of a word, on account of another vowel or diphthong at the beginning of the next. As *il' ego*, for *illa ego*, &c.

SYNARTROSIS, in anatomy, a species of articulation, wherein there is only an obscure motion, as in the bones of the carpus and metacarpus, the tarsus and metatarsus, &c. or there is no motion at all, as in the sutures of the skull, and articulation per harmoniam or bare application.

SYNCOPATION, in music, denotes a striking or beating of time, whereby the distinction of the several times or parts of the measure is interrupted. However, it is more properly used for the connecting the last note of any measure, or bar, with the first of the following measure; so as only to make one note of both.

Syncopation is also used when a note of one part ends or terminates on the middle of a note of the other part. This is otherwise denominated binding.

SYNCOPE, is a sudden retardation or stoppage of the circulation of the blood.

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SYNCOPE, in grammar, denotes an *ellipsis* or retrenchment of one or more letters or syllables from a word.

SYNDIC, in government and commerce, an officer in divers countries, intrusted with the affairs of a city or other community; who calls meetings, makes representations and solicitations to the ministry, magistracy, &c. according to the exigency of the case.

Syndic is also used for a person appointed to solicit some common affair, wherein he himself has a share; as happens, particularly, among several creditors of the same debtor, who fails or dies insolvent.

SYNECDOCHE, in rhetoric, a kind of figure, or rather trope frequent among orators and poets. There are three kinds of synecdoches; by the first, a part is taken for the whole; as the point for the sword, the roof for the house, the sails for the ship, &c. By the second, the whole is used for a part.—By the third, the matter of which the thing is made, is used for the thing itself; as steel for sword, silver for money, &c.—To which may be added another kind, where the species is used for the genus, or the genus for the species.

SYNGENESIA, in botany, one of Linnaeus's classes of plants, the nineteenth in order; so called because the stamina in these plants grow together, or are formed into a single regular congeries.

SYNNEUKOSIS, in anatomy, a kind of articulation of the bones, performed by the intervention of ligaments. See *Articulation*.

The synneukosis is reckoned a branch of the symphyis, and is, when the bones are connected together by a ligament, as in the os femoris, to the os ischium, and the patella to the tibia.

SYNOCHUS, in medicine, a continual fever without any remission. See *Fever*.

SYNOD, in astronomy, a conjunction, or concurrence, of two or more stars, or planets in the same optical place of the heavens.

SYNOD, or *Council*, in ecclesiastical history, implies a meeting, or assembly of bishops, or governors of the church, to rectify abuses in faith or discipline, to enact laws or canons for the government of the church, and to regulate all matters relating to the state of religion.

The diocesan synods were continued in England till the reign of Henry VIII. that is, the commencement of the reformation.

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SYNODICAL, belonging to a synod: thus synodical epistles are circular letters written by the synods to the absent prelates and churches, or even those general ones directed to all the faithful, to inform them of what had passed in the synod. For the synodical month, see *Month*.

SYNONIMOUS is applied to a word or term that has the same import or signification with another.

SYNONYMY, in rhetoric, a figure whereby synonymous terms, that is, various words of the same signification, are used, to amplify the discourse.

SYNOVIA, or *SINOVIA*, in medicine, a term used by Paracelsus, and his school, for the nutritious juice proper and peculiar to each part; thus they talk of the synovia of the joints, of the brain, &c. Others use synovia for the gout, and other diseases of the joints, arising from a vice in the nutritious juice through a wounded part, especially a joint.

SYNTAX, in grammar, the construction or connection of the words of a language into sentences, or phrases.

F. Buffier more accurately defines syntax, the manner of constructing one word with another, with regard to the different terminations thereof, prescribed by the rules of grammar.

Some authors, as M. Vaugelas, &c. confound syntax with style; but there is a real difference.

The office of syntax is to consider the natural suitableness of words with respect to one another, in order to make them agree in gender, number, person, mood, &c.

To offend in any of these points, is called to offend against syntax: and such kind of offence, when gross, is called a solecism; and when more slight, a barbarism. The several parts of speech are, with regard to language, what materials are with regard to a building. How well prepared soever they may be, they will never make a house, unless they be placed conformably to the rules of architecture. It is properly the syntax that gives the form to language, and it is that on which turns the most essential part of grammar. There are two kinds of syntax; the one of concord, wherein the words are to agree in gender, number, case, and person. The other of regimen or government, wherein one word governs another, and occasions some variations therein. The first, generally speaking

speaking, is the same in all languages, as being the natural series of what is used almost every-where, the better to distinguish discourse. Thus, the distinction of two numbers, singular and plural, has rendered it necessary to make the adjective agree with the substantive in number; that is, to make the one singular or plural, when the other is so: for, as the substantive is the subject confusedly, though directly, marked by the adjective; if the substantive expresses several, there must be several subjects expressed in that form by the adjective; and, by consequence, it ought to be in the plural: as, *homines docti*, learned men: but, there being no variety of termination in the adjective, in English, to distinguish the number, it is only implied. The distinction of masculine and feminine gender obliges the languages, which have distinct terminations, to have a concordance or agreement between the substantive and adjective, in gender as well as number: and for the same reason, the verbs are to agree with the nouns and pronouns, in number and person. If at any time we meet with any thing that seems to contradict these rules, it is by a figure of speech, that is, by having some word understood, or by considering the thoughts rather than the words themselves.

The syntax of government, on the contrary, is generally arbitrary; and, on that account, differs in most languages. One language, for instance, forms their regimen by cases; as the Latin and Greek: others use particles in lieu thereof; as the English, French, Italian, Spanish, &c.

One or two general rules, however, may be here noted, which obtain in all languages. 1. That there is no nominative case but has a relation to some verb, either expressed or understood; since we do not only speak to express what we perceive, but to express what we think of what we perceive, which is done by the verb.

2. That there is no verb but has its nominative case either expressed or understood; for the office of the verb being to affirm, there must be something to affirm of; which is the subject or nominative case of the verb; except before an infinitive, where it is an accusative; as, *Scio Petrum esse doctum*, I know Peter to be learned.

3. That there is no adjective, but has a relation to some substantive; in regard

the adjective marks confusedly the substantive, which is the subject of the form or quality distinctly marked by the adjective.

4. That there never comes any genitive case but what is governed by some other noun.

5. The government of verbs is frequently taken from various sorts of references, included in the cases, according to the caprice of custom or usage; which yet does not change the specific relation of each case, but only shows that custom has made choice of this or that.

SYNTAXIS, in medicine, an attenuation or colligation of the solids of the body; such as frequently happen in atrophies, inflammations of the bowels, colliquative fevers, &c. wherein a fatty uliginous matter is voided with the excrements by stool.

SYNTHESIS, composition, or the putting of several things together; as in making a compound medicine of several simple ingredients, &c.

SYNTHESIS, in logic, denotes a branch of method opposite to analysis, called the synthetic method.

SYNTHESIS, in surgery, an operation whereby divided parts are re-united, as in wounds, fractures, luxations, &c.

* **SYRENS**, in fabulous history, beings, whose lower parts resembled fishes, and their upper parts women. They were the daughters of Achelous, and were so well skilled in music, that they ensnared and destroyed all who heard them. Others say that they were half birds and half women, and that presuming to contend with the Muses, they were vanquished, and stripped at once of their voices and feathers. However, their names were Parthenope, Ligea, and Leucosia.

* **SYRIA**, a province of Turkey in Asia, bounded on the north by Diarbeck and Natolia, on the east by Diarbeck and the deserts of Arabia, which, together with Judea, bound it on the south, and on the west by the Mediterranean sea. The Turks divide it into three beglerbeglics, namely, those of Aleppo, Tripoli, and Damascus. It abounds in oil, corn, and several sorts of fruits, as well as pease, beans, and all kinds of pulse and garden stuff. The inhabitants trade in silk, camblets, and salt. Damascus, by the Turks called Scham, is the capital city.

SYRINGA, in botany, a plant, the flower of which has a small, tubulous, permanent

permanent empalement of one leaf, indented in four parts; it has one petal, with a long cylindrical tube, cut into four obtuse segments at the brim, which spread open, and two very short stamina, terminated by small summits, standing within the tube; it has an oblong germen, supporting a short slender style, crowned by a thick bifid stigma. The germen afterwards turns to an oblong, compressed, acute-pointed capsula, with two cells, opening with two valves contrary to the partition, including in each cell one oblong acute-pointed seed, with a membranaceous border. There are three species of this plant, namely, 1. The syringa with oval heart-shaped leaves; or blue lilac. 2. Syringa with spear-shaped leaves, commonly called Persian jasmine. 3. The syringa with entire spear shaped leaves, and others which are cut and jagged; commonly called cut-leaved Persian jasmine.

SYRINGE, an instrument serving to imbibe, or suck up a quantity of any fluid, and so squirt or expel the same with violence.

SYRUP, or **SYROP**, in pharmacy, a liquid form of medicine, prepared of decoctions, juices, or infusions, preserved by means of honey or sugar, and reduced to such a consistence, that a drop let fall on a marble does not spread. Syrups, like other officinal preparations, may be made to answer various intentions, and consequently may be either of a cooling, heating, drying, inciding, expectorating, incrassating, diuretic, sudorific, lithontriptic, alexiterial, or corroborating quality, according to the different virtues of the general rules for the making of syrups.

1. The sugar employed for syrups made without coction, should first be boiled with water to a candy consistence; observing to clarify it with the whites of eggs, and by despumation. But the whitest and purest sugar and sugar-candy do not require this labour. The sugar thus prepared ought afterwards to be powdered, that it may dissolve the easier.

2. Though a double weight of sugar, in proportion to the liquor, may be required in making such syrups, yet a less proportion will generally suffice. First, therefore, dissolve only an equal quantity of sugar; then by degrees add a little more in powder, till it remain undissolved at the bottom, to be afterwards incorporated by the gentle heat of a water bath.

3. Acid syrups, or those made with

the juices of fruits, should not be put into copper vessels, unless such as are tinned.

4. What should be observed of decoctions in general, is also to be understood of decoctions for syrups. The vegetables used either for decoctions or infusions are to be moderately dried, unless they are expressly required fresh gathered.

5. Syrups made by coction are to be clarified with the white of eggs, except diacodium; which therefore requires the purest sugar. The solutive and purging syrups ought rather to be made of brown sugar.

SYSSARCOSIS, in anatomy, a particular species of the kind of articulation called also symphysis. The syssarcosis is a natural union of two bones by means of flesh or muscles; such is that of the os hyoides and omoplate.

SYSTEM, in general, denotes an assemblage or chain of principles and conclusions, or the whole of any doctrine, the several parts whereof are connected together, and follow or depend on each other; in which sense we say, a system of philosophy, a system of divinity, &c.

SYSTEM, in astronomy, denotes an hypothesis or supposition of a certain order, and arrangement of the several parts of the universe, whereby astronomers explain all the phenomena or appearances of the heavenly bodies, their motions, changes, &c. The most celebrated hypotheses or systems of the world are three, viz. the Ptolemaic, Tychonic, and Pythagorean, or Copernican system.

SYSTEM, in poetry, implies a certain hypothesis, or scheme of religion, from which the poet is never to recede.

SYSTEM, in music, signifies a compound interval; or an interval composed, or supposed to be composed, of several lesser intervals; such as the octave, &c.

The concinnous systems are those consisting of such parts as are fit for music, and those placed in such an order between the extremes, as that the succession of sounds from one extreme to another may have a good effect.

Inconcinnous systems are those where the simple intervals are inconcinnous, or ill-disposed, betwixt the extremes.

SYSTOLE, in anatomy, the contraction of the heart, whereby the blood is drawn out of its ventricles into the arteries; the opposite state to which is called the diastole, or dilatation of the heart.

T.

T A B

T A consonant, and the nineteenth letter in the alphabet. It had the same form in the old Greek alphabet, and was derived from the Phœnician or Samaritan character Tan, by placing the horizontal line or stroke quite upon the top of the perpendicular one. It is formed in the voice from a strong expulsion of the breath through the mouth, upon a sudden detraction of the tongue from the fore part of the palate, with the lips at the same time open. **T** has its proper sound in *tan, tin, ten, ton, tun, bat, let, bit, bot, put*. When it comes before (i) followed by another vowel, it is sounded like *S*, as in *nation, generation, potion, expatriate, &c.* When aspirated, that is, when *b* comes after it, it has a twofold sound; one clear and acute, as *thin, theory, &c.* the other more obscure and obtuse, as in *thine, those these, &c.*

When the tribunes approved of the decrees of the senate, they testified their consent by subscribing a **T**.

In music, **T** stands for tutti, all, or altogether.

T, or **TAU**, in heraldry, a kind of cross patent, or truncated; found in all the armories of the commanders of the order of St. Anthony.

TABBY, in commerce, a kind of rich silk which has undergone the operation of tabbying.

TABBYING, the passing a silk or stuff under a calender, the rolls of which are made of iron or copper, variously engraven, which bearing unequally on the stuff, renders the surface thereof unequal, so as to reflect the rays of light differently, making the representation of waves thereon.

TABERNACLE, among the Hebrews, a kind of building in the form of a tent, set up by express command of God, for the performance of religious worship, sacrifices, &c. during the journeying of the Israelites in the wilderness; and, after their settlement in the land of

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Canaan, made use of for the same purpose till the building of the temple of Jerusalem. It was divided into two parts, the one covered, and properly called the tabernacle; and the other open, called the court. The curtains which covered the tabernacle were made of linen of several colours, embroidered. There were ten curtains, twenty-eight cubits long and four in breadth. Five curtains fastened together made up two coverings, which covered all the tabernacle. Over these there were two other coverings; the one of goat-hair, and the other of sheepskins. The holy of holies was parted from the rest of the tabernacle by a curtain made fast to four pillars, standing ten cubits from the end. The length of the whole tabernacle was thirty-two cubits, that is, about fifty feet; and the breadth twelve cubits, or nineteen feet. The court was a spot of ground one hundred cubits long, and fifty in breadth, enclosed by twenty columns, each twenty cubits high and ten in breadth, covered with silver, and standing on copper bases, five cubits distant from each other; between which there were curtains drawn, and fastened with hooks. At the east end was an entrance, twenty cubits wide, covered with a curtain hanging loose.

The tabernacle was finished and set up on the first day of the first month of the second year after the departure out of Egypt. When it was set up, a dark cloud covered it by day, and a fiery cloud by night. Moses went into the tabernacle to consult the Lord. It was placed in the midst of the camp, and the Israelites were ranged orderly about it, according to their several tribes. When the cloud arose from off the tabernacle, they decamped; the priests carried those things which were sacred, and the Levites all the several parts of the tabernacle. Part of the tribes went before, and the rest followed, and the baggage of the tabernacle marched in the center.

The learned Spencer has endeavoured

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to prove, that the Jewish tabernacle, and all its furniture, was an imitation of the portable temples of the heathens, and of the custom of carrying their gods along with them, in their migrations from one country to another.

Fest of **TABERNACLES**, a solemn festival of the Hebrews, observed after harvest, on the fifteenth day of the month Tisri, instituted to commemorate the goodness of God, who protected the Israelites in the wilderness, and made them dwell in booths, when they came out of Egypt. On the first day of the feast, they began to erect booths of the boughs of trees; and in these they were obliged to continue seven days. The booths were placed in the open air, and were not to be covered with cloths, nor made too close by the thickness of the boughs; but so loose that the sun and the stars might be seen, and the rain descend through them. In these they eat, and drank, and slept, during the continuance of the festival. But sick persons who could not bear the smell of the earth, might stay at home: the rabbins also freed women and little children from this obligation. If the rain likewise proved so great that they could not live dry, or the cold so intense that it endangered their healths, they might all return to their houses.

TABERNÆMONTANA, in botany, a genus of plants, the flower of which has a small empalement, cut into five acute parts; it has one funnel shaped petal, with a long cylindrical tube which is belted at both ends, and at the brim is cut into five oblique segments; it has five small stamina in the middle of the tube, terminated by summits which join together, and two germen, supporting an awl-shaped style, crowned by decayed stigmas. The germen afterward turns to two bellied capsules, which are horizontally reflected; opening with one valve, having one cell, filled with oblong oval seeds, and surrounded with pulp. There are two species of this plant. 1. *Tabernæmontana* with spear-shaped leaves, which are placed opposite, and flowers growing in a corymbus, on the sides of the branches. 2. *Tabernæmontana* with oblong, oval, acute pointed leaves, which are placed opposite, and flowers growing in a corymbus, terminating the branches.

TABES, in medicine, or **TABES DORSALIS**, arises from a disorder of the spinal marrow, and is principally incident to persons of a salacious disposition, or such as are newly married.

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TABLATURE, in anatomy, a division or parting the skull into two tables.

TABLE, in architecture, a smooth, simple member or ornament of various forms, but most usually in that of a long square.

A projecting table is that which stands out from the naked of the wall, pedestal, or other matter it adorns.

Raked-table, is that which is hollow in the die of a pedestal, or elsewhere, and is usually encompassed with a moulding.

Razed-table, is an embossment in a frontispiece for the putting an inscription, or other ornament, in sculpture. This is what M. Perrault understands by abacus in Vitruvius.

Crowned-table, that which is covered with a cornice, and in which a basso relievo is cut, or a piece of black marble incrustated for an inscription.

Rusticated table, that which is picked, and whose surface seems rough, as in grottos, &c.

TABLE, in perspective, denotes a plain surface, supposed to be transparent, and perpendicular to the horizon. It is always imagined to be placed at a certain distance between the eye and the objects, for the objects to be represented thereon by means of the visual rays passing from every point thereof through the table to the eye; whence it is called perspective-plane.

TABLE, in anatomy. The cranium is said to be composed of two tables, or laminæ, i. e. it is double, as if it consisted of two bones laid over one another.

TABLES of the Law, in Jewish antiquity, two tables on which were written the Decalogue, or Ten Commands, given by God to Moses on Mount Sinai.

TABLE, among the jewellers. A table diamond, or other precious stone, is that whose upper surface is quite flat, and only the sides cut in angles; in which sense a diamond, cut table-wise, is used in opposition to a rose diamond.

TABLE is also used for an index or repertory put at the beginning or end of a book, to direct the reader to any passage he may choose to consult: thus we say table of matters, table of authors quoted, &c. Tables of the Bible are called Concordances.

TABLE of Houses, among astrologers, certain tables ready drawn up for the assistance of practitioners in that art, for the erecting or drawing of figures or schemes.

TABLE,

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TABLE, in mathematics, a system of numbers calculated to be ready at hand for the expediting astronomical, geometrical, and other operations: thus we say, tables of the stars; tables of sines, tangents, and secants; tables of logarithms, rhumbs, &c. sexagenary tables; loxodromic tables, &c.

Astronomical TABLES, are computations of the motions, places, and other phenomena of the planets, both primary and secondary.

TABOR, a small drum.

TOBORITES, or **THABOUTS**, a branch or sect of the ancient Hussites. They carried the point of reformation farther than Huss had done, rejected purgatory, auricular confession, the unction of baptism, transubstantiation, &c. They reduced the seven sacraments of the Romanists to four, viz. baptism, the eucharist, marriage, and ordination.

TACAMAHACA, in the materia medica, a resin obtained from a tree resembling the poplar, bearing at the extremities of the branches small roundish fruits, including a seed like a peach kernel; a native of the temperate parts of the continent of America, and in a sheltered situation enduring the winters of our own country.

TACHYGRAPHY, the art of writing fast, or of a short-hand; of which authors have invented several methods.

TACTICS, in the art of war, the method of disposing forces to the best advantage in order of battle, and of performing the several military motions and evolutions.

TADPOLE, a young frog, before it has disengaged itself from the membranes that envelope it in its first stage of life.

TENIA, the **TAPE-WORM**, in zoology, a genus of worms, the body of which is of an oblong form, and composed of evident joints or articulations, in the manner of the links of a chain, or beads of a necklace.

TENIA, in architecture, a member of the Doric capital, resembling a square fillet, or reglet: it serves instead of a cy-matium.

TAFFETY, in commerce, a kind of fine, smooth, silken, stuff, having usually a remarkable lustre or gloss.

There are taffeties of all colours, some plain, others striped with gold, silver, silk, &c. others chequered, others flowered, others in the Chinese point, others the Hungarian; with various others, to which the mode or the caprice of the

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workmen give such whimsical names, that it would be as difficult as it is useless to rehearse them; besides that, they seldom hold beyond the year wherein they first rose. The old names of taffeties, and which still subsist, are taffeties of Lyons, Spain, England, Florence, Avignon, &c. The chief consumption of taffeties is in summer-dresses for women, in linings, scarves, window-curtains, &c.

TAGETES, *French* **MARYGOLD**, or *African* **MARYGOLD**, in botany, the name of a genus of plants, the flower of which is of the radiated kind: its disk is composed of floscules divided into several segments, and its outer edge of semi-floscules; all standing on embryo seeds, and contained in a one-leaved cup of a tabulated form. The embryo's finally become seeds of an angular form, furnished with a foliaceous head, and affixed to the thalamus of the flower. There are also some species in which the flower is wholly composed of semi-floscules.

We have a great many species of this plant annually raised in our gardens, for the beauty of their flowers. They are propagated by sowing the seeds in spring, on a moderately hot-bed; when the young plants come up, they must have air allowed them; and, when three inches high, they should be removed to another hot-bed, which should be arched over with hoops that it may be sheltered with mats. They are to be planted here at about eight inches distance, and, when they are grown stronger, as about the beginning of May, they are to be taken up with a ball of earth about their roots, and placed where they are to remain; or else at eighteen inches distance in a nursery, where, when they flower, the finest sorts may be marked and removed, with a large ball of earth to their roots, either into pots, or into the borders of the flower-garden. They are very beautiful; but their smell is very offensive. *Miller's Gard. Dict.*

TAJACU, the **MUSK-HOG**, in zoology, a species of hog, with a cyst on the back, and no tail: it is a native of Mexico, and is smaller than the common hog. On the middle of the head there arises a kind of crest, composed of a large cluster of bristles; and on the middle of the back there is a kind of cyst or gland, with an opening at the upper part, in which is secreted a perfumed fluid matter, of a mixt smell between that of musk and civet; whence the English name.

TAIL.

TAL

TAIL, Cauda, the train of a beast, bird, or fish; which, in land animals, serves to drive away flies, &c. and in birds and fishes, to direct their course, and assist them in ascending or descending in the air or water.

TAIL of a Comet, denotes the luminous rays issuing from a comet towards that part of the heavens from whence it seems to move. See *Comet*.

We have an enquiry into the cause of the tails of comets by Mr. Euler in the *Mem. de l'Acad. de Berlin*. He thinks there is a great affinity between these tails, the zodiacal light, and the aurora borealis; and that the common cause of them all is the action of the sun's light on the atmospheres of the comets, of the sun, and of the earth. He supposes that the impulse of the rays of light on the atmosphere of comets may drive some of the finer particles of that atmosphere far beyond its limits; and that this force of impulse, combined with that of gravity towards the comet, would produce a tail, which would otherwise always be in opposition to the sun, if the comet did not move. But the motion of the comet in its orbit, and about an axis, must vary the position and figure of the tail, giving it a curvature, and deviation from a line drawn from the center of the sun to that of the comet; and that this deviation will be greater, as the orbit of the comet has the greater curvature, and the motion of the comet is more rapid. It may even happen, that the velocity of the comet, in its perihelion, may be so great, that the force of the sun's rays may produce a new tail before the old one can follow; in which case the comet might have two or more tails. The possibility of this is confirmed by the comet of 1744, which was observed to have several tails, while it was in its perihelion.

TAIL of the Trenches, in the art of war, the post or place where the besiegers begin to break ground.

Dragon's TAIL, in astronomy, the descending node of a planet.

TAIL, or FEE-TAIL, in law, a limited estate, or fee; opposed to fee-simple.

TALC, or TALK, in natural history, a large class of fossil bodies, composed of broad, flat, and smooth laminæ or plates, laid evenly and regularly on one another; easily fissile, according to the site of these plates, but not all so in any other direction: flexible and elastic; bright, shining, and transparent; not

TAL

giving fire with steel, nor fermenting with acid menstrua, and sustaining the force of a violent fire without calcining.

Talc is employed, in those places where it is found in any considerable quantity, in compositions for earthen vessels; and by some for tests and cupels. From its smoothness, unctuousity, and brightness, it has been greatly celebrated as a cosmetic; and the chemists have submitted it to a variety of operations, for procuring from it oils, salts, tinctures, magisteries, &c. for that intention. But all their labours have been in vain; and all their preparations sold under the name of talc have either contained nothing of that mineral, or only a fine powder of it.

TALENT, a weight and coin, both very famous among the ancients, but very different in different countries. The value of the talent is very hard to assign in English money, as being used among all the people throughout the East; and its value, and the manner of computation, different among each: a difficulty abundantly shewn by Budzus, in his learned treatise *De Asse*.

TALENT, as a species, or money, among the Hebrews, was sometimes used for a gold coin, the same with the shekel of gold, called also stater, and weighing only four drams. The Hebrews reckoned by these talents as we do pounds, &c. Thus a million of gold, or million of talents of gold, among them, was a million of shekels, or nummi; the nummus of gold being the same weight with the shekel, viz. 4 drams.

Yet the Hebrew talent weight of silver, which they call cicar, was equivalent to that of 3000 shekels, or 113 pounds English troy-weight, according to Arbuthnot's computation.

TALES, in law, a word used for a supply of men impannelled on a jury, and not appearing; or upon appearance, being challenged for the plaintiff or defendant, as not indifferent; in which case the judge, upon motion, of course grants a supply to be made by the sheriff, of some persons there present, equal in reputation to those that are impannelled. Where a person has had one tales, he may have another, but not have the latter to contain so many as the former, because the first tales must be under the number of the principal pannel, except in the case of appeal; and in like manner every tales is to be less than other, until the whole number made use of, are persons

persons without exception. There are two kinds of tales, the one de circumstantibus, and the other a decem tales: that of circumstantibus, is, when a full jury does not appear at the nisi prius, or so many are challenged as not to have a full jury; on which motion being made, the judge will grant this tales, which the sheriff immediately returns into court. A decem tales is when a full jury does not appear at a trial at bar, in which case this writ goes out to the sheriff, commanding him to *asponere decem tales*.

TALIO, *Lex Talionis*, a species of punishment in the Mosaic law, whereby an evil is returned similar to that committed against us by another; hence that expression, "Eye for eye, tooth for tooth." This law was at first inserted in the twelve tables amongst the Romans, but afterwards set aside, and a power given to the prætor to fix upon a sum of money for the damage done.

TALISMANS, magical figures cut or engraved with superstitious observations on the characteristics and configurations of the heavens, to which some astrologers have attributed wonderful virtues, particularly that of calling down celestial influences.

TALLOW, a sort of animal fat melted down and clarified for the use of making candles, &c. See *Candle*.

TALLOW-TREE, in China, is a tree growing in great plenty in that country, which produces a substance like our tallow, and serving for the same purpose.

TALLY, in law, a piece of wood cut in two parts, whereon accounts were anciently kept, by means of notches; one part of the tally being kept by the debtor, and the other by the creditor.

As to the tallies of loans, one part thereof is kept in the Exchequer, and the other part given to particular persons in lieu of an obligation for the monies they have lent to the government on acts of parliament. This last part is called the stock, and the former the counter stock, or counter tail.

Tallies of debt, are a kind of acquittance for debt paid to the king, upon the payment of which every debtor receives one of these tallies; and on carrying the same to the clerk of the Pipe-office, has an acquittance there given him, on parchment, for his full discharge.

Tallies of reward, were an allowance made to sheriffs for such sums as they have cast upon them in their accounts, but cannot levy.

TALMUND, or **THALMUND**, among the Jews, a collection of the doctrines of their religion and morality. It is the *corpus juris*, or body of the laws and customs of the Jews, who esteem it equal to the scriptures themselves.

TALON, in architecture, a kind of moulding, which consists of a cymatium, crowned with a square fillet; frequently found to terminate joiners-work, as those of doors, windows, &c.

TALPA, in surgery, a tumour generally confined to the head, and appearing as the consequence of the venereal disease.

TALUS, in anatomy, the same with the astragal. See *Astragal*.

TALUS, or **TALUT**, in architecture, the inclination or slope of a work; as of the outside of a wall, when its thickness is diminished by degrees, as it rises in height to make it the firmer.

TALUS, in fortification. Talus of a bastion, or rampart, is the slope or diminution allowed to such a work, whether it be of earth or stone, the better to support its weight.

The exterior talus of a work, is its slope on the side towards the country; which is always made as little as possible, to prevent the enemy's scalado; unless the earth be bad, and then it is absolutely necessary to allow a considerable talus for its parapet. The interior talus of a work is its slope on the inside towards the place.

TAMARIND, in the materia medica, the fruit of a pretty large tree, growing in Arabia, and in the East and West Indies. The fruit is a pod, somewhat resembling a bean cod, including several hard seeds, together with a dark-coloured viscid pulp: the East India tamarinds are longer than those of the West, the former containing six or seven seeds each, the latter rarely above three or four: they nevertheless seem both to be the produce of one species of plant. The pulp, with the seeds, connected together by numerous tough strings or fibres, are brought to us freed from the outer shell: the oriental sort is drier and darker-coloured than the occidental, and has more pulp: the former is sometimes preserved without addition, the latter has always an admixture of sugar.

The pulp of tamarinds is an agreeable laxative acid; of common use in inflammatory and putrid disorders, for abating thirst and heat, correcting putrefaction, and loosening the belly. The dose, as a laxative, is two or three drams: an ounce

or

or two prove moderately cathartic. It is an useful addition to the purgative sweets, cassia and manna, increasing their action, and rendering them less liable to produce flatulencies: the resinous cathartics are somewhat weakened by it. Tournefort observes that an essential salt may be obtained from tamarinds, by dissolving the pulp in water, and setting the filtered solution, with some oil upon the surface, in a cellar for several months; that the salt is of a sourish taste, and difficultly dissoluble in water; and that a like salt is sometimes found also naturally concreted on the branches of the tree.

TAMBAC, a mixture of gold and copper, which the people of Siam hold more beautiful, and set a greater value on, than gold itself.

TAMBOUR, in architecture, a term applied to the Corinthian and Composite capitals, as bearing some resemblance to a drum, which the French call tambour.

TAMBOUR is also used for a little box of timber-work covered with a ceiling, within the porch of certain churches both to prevent the view of persons passing by, and to keep off the wind, &c. by means of folding doors.

TAMBOUR also denotes a round coarse stone, several of which form the shaft of a column not so high as a diameter.

TAMBOUR is also used for a kind of embroidery at present much in fashion. It is taught in boarding-schools, and is a proper employment for ladies.

TAMPION, or **TOMPION**, among gunners a plug to stop the mouths of cannons, mortars, &c. to keep them clean within.

TAN, the bark of oak, chopped and ground by a tanning mill into a coarse powder to be used in the tanning or dressing skins.

Tan is of great use in gardening: first, by its fermentation, when laid in a body, which is always moderate and of a long duration, which renders it of great service to hot-beds: and, secondly, after it is well rotted, it becomes excellent manure for all sorts of cold stiff land; upon which one load of tan is better than two of rotten dung, and will continue longer in the ground.

The use of tan for hot-beds has not yet been many years known in England; the first hot-beds of this sort, which were made in England, were at Blackheath, in Kent, about fifty-five years ago: these were designed for raising of orange trees;

but the use of these hot-beds being but little known at that time, they were made but by two or three persons, who had learned the use of them in Holland and Flanders, where the gardeners seldom made any other hot beds: but in England there were very few hot-beds made of tanner's bark, before the ananas were introduced into this country, which was in 1719, since which time the use of these hot-beds have been more general; and are now made in all those gardens, where the ananas plants are cultivated, or where there are collections of tender exotic plants preserved: and the gardeners here are now better skilled in making and managing of these hot-beds, than in most other countries.

TANGENT, in geometry, a right-line which touches a circle but in one point, and consequently, if infinitely produced, could never cut the same.

TANGENT of an Arch, is a right-line drawn perpendicularly from the end of a diameter, passing to one extremity of the arch, and terminated by a right-line drawn from the center, through the other extremity of the arch.

Co-TANGENT, of an Arch, is the tangent of the complement of that arch.

TANGENT of a Curve, is a right-line which only touches the curve in one point, but does not cut it.

TANNER, one who dresses hides, &c. by tanning them.

TANNING, the preparing of skins or hides in a pit, with tan and water, after the hair has been first taken off, by putting the skins into lime-water.

TANNING ENGINES, machines used by tanners for beating, cutting, and grinding of tan, or the materials used in tanning.

* **TANTALUS**, in Fabulous history, was the king of Phrygia and Paphlagonia, the son of Jupiter and the nymph Plota. He one day entertained the gods at his table; when, to prove their divinity, he served up his son Pelops cut in pieces. All the deities, except Ceres, perceived his cruelty, and would not touch his provisions. That goddess, whose thoughts were solely employed about her daughter Proserpine, inadvertently eat a part of his left shoulder. Pelops, however was restored to life, and an ivory shoulder given him instead of that which had been eaten; while Tantalus was thrown into Tartarus, where he was punished with perpetual hunger and thirst. He was chained in a lake, the water of which reached up to his chin, but retired when

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when he attempted to drink. The branch of a tree, loaded with fruit, hung even to his lips, but on his attempting to pluck the fruit the branch sprang upwards. It is said that Tantalus had before taken away Ganymede, the son of Tros, king of Troy, for which he had been obliged to fly into Peloponnesus; that he built the city of Smyrna, and left three sons, Pelops, Daëtylus, and Brocas, and a daughter named Niobe.

TANTALUS's CUP, in hydraulics, a siphon so adapted to a cup, that the long leg may go down through the bottom of the cup.

TANTAMOUNT, something that amounts, or is equivalent to some other.

TAPER, TAPERING, is understood of a piece of timber, or the like, when broad at one end gradually diminishing to the other, as is the case in pyramids, cones, &c.

TAPER Board, is applied to a piece of ordnance when it is wider at the mouth than towards the breech.

TAPER also denotes a kind of tall wax candle placed in a candlestick, and burnt at funeral processions, and in other church solemnities. Tapers are made of different sizes; in some places as Italy, &c. they are conical or taper; both kinds are pierced at the bottom for a kind of pin in the candlestick to enter.

Paschal TAPER, among the Romanists, a large taper whereon the deacon applies five bits of frankincense in holes made for the purpose in form of a cross, and which he lights with new fire in the ceremony of Easter-Sunday.

TAPESTRY, or TAPISTRY, a curious kind of manufacture, serving to adorn a chamber or other apartment, by covering or lining the walls thereof. It is a kind of woven hangings of wool and silk, frequently raised and enriched with gold and silver, representing figures of men, animals, landscapes, histories, &c.

The invention of tapestry seems to have come to us from the Levant; and this seems the more probable, because the workmen concerned in it were called at least in France, Sarasins, or Sarrafinois. It is supposed that the English and Flemish, who were the first that excelled in making tapestry, might bring the art with them from some of the croisades, or expeditions against the Saracens. Be this as it will, it is certain that these two nations, especially the English, were the first who set on foot this noble and rich manufacture in Europe, now one of the finest or-

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naments of palaces, churches, &c. and therefore if they may not be allowed the inventors, they have at least the glory of being the restorers of this so curious and admirable an art, as gives a kind of life to wools and silks, in no respect inferior to the paintings of the best masters.

The usual widths of tapestries are from two ells to three ells Paris measure.

TAPLINGS, in the English salt-works, the name given to certain bars of iron, which support the bottom of the pan in which the brine is boiled. These pans are very large, and cover a wide furnace; but as their width would make them apt to bend in the middle, which would spoil the working of the salt, there is a sort of wall made of brick carried along the middle of the furnace, and on the top of this are placed these taplings; they are about eight inches high, and from four to six in thickness, being smallest at the top. These are placed at about three feet distance one from another, and the wall which supports them, and which is called the mid-feather, is broad at the base, and so narrow at the top, as barely to give room for the bases of the taplings.

TAPPING, in general, the act of piercing an hole in a vessel, and applying a tube or cannula in the aperture, for the commodious drawing off the liquors contained therein.

TAR, a thick, black, resinous, very adhesive juice, melted out by fire from old pines and fir-trees. The trees, cut in pieces, are inclosed in a large oven, which being heated by a fire on the outside, or the wood itself kindled and smothered, the juice runs off by a canal at the bottom. Tar differs from the turpentine or native resinous juice of the trees in having received a disagreeable empyreumatic impression from the fire; and in containing, along with the pungent bitter terebinthinate matter, a portion of the acid, which is extricated from the wood by the heat, and likewise of its gummy or mucilaginous matter. By the mediation of these principles, a part of the terebinthinate oil and resin becomes dissoluble in watery liquors, which extract little or nothing from the purer turpentine.

Water impregnated with the more soluble parts of tar has been recommended as a remedy for almost all diseases. The proportions that have been commonly followed are, two pounds of tar to a gallon of water; which are to be well stirred together, then suffered to settle for two days, and the clear liquor poured off

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for use. It is observed, "That tar-water, when right, is not paler than French, nor deeper-coloured than Spanish white wine, and full as clear: if there be not a spirit very sensibly perceived in drinking, the tar-water is not good. It may be drank either cold or warm. As to the quantity, in common chronicl indispositions, a pint a day will suffice, taken on an empty stomach, at two or four times: more may be taken by strong stomachs. But those who labour under great and inveterate maladies, must drink a greater quantity, at least a quart every twenty-four hours. In acute cases, it must be drank in bed warm, and in great quantity, the fever still enabling the patient to drink, perhaps a pint every hour." Though this medicine is undoubtedly very far inferior to the character that has been given of it by the bishop of Cloyne, and some others, it is apparently capable of answering important purposes, as a deobstruent balsamic solution, moderately warm and stimulating. It sensibly raises the pulse, and increases either perspiration or the grosser evacuations; and we are informed of some late instances of its good effects in disorders of the leprous kind.

Some have imagined the acid to be the principle that gives virtue to tar-water, and hence have endeavoured to introduce instead of the infusion, an acid spirit extracted from tar by distillation. But the effects of this, as of other acids, are opposite to those experienced from tar-water; nor does the acid of tar differ from that which is extracted by fire from all kinds of recent wood. Tar-water, distilled, yields a liquor very considerably impregnated with its flavour, though more grateful than the infusion itself both in smell and taste; there remains a light spongy, blackish substance, not acid but bitter, partially dissoluble again in water.

This juice is sometimes given also in substance, mixed with so much powdered liquorice, or other like powdery matters, as is sufficient to render it of a due consistence for being formed into pills. An ointment, made by melting it with an equal weight of mutton suet, and straining the mixture whilst hot, is sometimes used as a digestive, and said to be particularly serviceable against scorbutic and other cutaneous eruptions.

On inspissating tar, or boiling it down to dryness without addition, it gives over an acid liquor in considerable quantity, and an ethereal oil of the same general

nature with that of turpentine, but impregnated with the empyreumatic flavour of the tar. The solid residuum is the common pitch. This is less pungent and less bitter than the liquid tar, and is used only in some external applications, as a warm adhesive resinous substance. Neumann observes, that when melted with oils, resins, and fats, into ointments and plasters, the pitch is generally disposed to separate and precipitate.

Tar is likewise used for coating and chaulking ships and many other intentions at sea.

TAR-WATER.—In some parts of America, tar-water is made by putting a quart of cold water to a quart of tar, and stirring them well together in a vessel, which is left standing till the tar sinks to the bottom. A glass of clear water, being poured off for a draught, is replaced by the same quantity of fresh water, the vessel being shaken, and left to stand as before. And this is repeated for every glass, so long as the tar continues to impregnate the water sufficiently, which will appear by the smell and taste.

But, as this method produces tar-water of different degrees of strength, Bishop Berkley says, he chuses to make it in the following manner: pour a gallon of cold water on a quart of tar, and stir and mix them thoroughly with a ladle or flat stick, for the space of three or four minutes; after which the vessel must stand eight and forty hours, that the tar may have time to subside; when the clear water is to be poured off, and kept for use no more being made from the same tar, which may still serve for common purposes.

It has been found, that several persons infected with cutaneous eruptions and ulcers were immediately relieved, and as soon after cured, by the use of this medicine. It is said, that, even in the foulest distempers, it proved much more successful than salivations and wood-drinks had done. It also succeeded, beyond expectation, in a tedious and painful ulceration of the bowels, in a consumptive cough, and, as appeared by expectorated pus, an ulcer in the lungs, in a pleurisy and peripneumony. And, when a person who had been for some years subject to erysipetulous fevers, perceived the usual forerunning symptoms to come on, the drinking of tar-water prevented the erysipelas.

Tar-water cures indigestion, and gives a good appetite. It is an excellent medicine in an asthma; it imparts a kindly warmth

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warmth and quick circulation to the juices, without heating, and is therefore useful, not only as a pectoral and balsamic, but also as a powerful and safe deobstruent in cachectic and hysterical cases. As it is both heating and diuretic, it is very good for the gravel. The bishop says, he believes it to be of great use in the dropsy, having known it cure a very bad anasarca in a person whose thirst, though very extraordinary, was in a short time removed by the drinking of tar-water. It may likewise be safely used in inflammatory cases; and, in fact, hath been found an admirable febrifuge, at once the safest cooler and cordial.

To sailors, and all sea-faring persons, who are subject to scorbutic disorders, and putrid fevers, especially in long southern voyages, he is persuaded this tar-water would be very beneficial.

It is to be observed, that tar-water should not be made in unglazed earthen vessels, these being apt to communicate a nauseous sweetness to the water.

The same ingenious author recommends tar-water in the plague, and for the distemper among the horned cattle; with what success must be left to experience.

TARANTISMUS, in medicine, the disease or affection of those bit by the tarantula.

TARANTULA, in the history of insects, a species of araneus, with an oval hairy body and thick legs.

This is one of the large spiders, but is not the very largest known: its body is three quarters of an inch long, and of the thickness of one's little finger: it is usually of an olive brown, variegated with a duskier colour; but in this it varies greatly: it is covered with a short and soft down, or hairiness; the points of its forceps are very fine and sharp: this species is a native of Apulia.

As to the effects of the poison they convey into the wound they make; there seems yet room for much explanation about it. We are told, that in the summer months, especially when the heats are greatest, as in the dog-days, the tarantula, creeping among the corn in the fields, bites the mowers and passangers: that in the winter it lurks in holes, and is scarcely seen; and that if it bites then, it is not so venomous, neither does it induce any ill symptoms: but in hot weather, according to Dr. Mead, although the pain of its bite is at first no greater than what is caused by the sting of a bee,

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yet the part is quickly after discoloured with a livid, black, or yellowish circle, and raised to an inflamed swelling; the patient within a few hours is seized with a violent sickness, difficulty of breathing, universal faintness, and sometimes trembling, with a weakness in the head; and on being asked his ailment, with a tremulous voice, and melancholy look, points to his breast, as if the heart was most affected: the patient grows by degrees more melancholy, stupid, and strangely timorous, and in a short time expires, unless music is called to his assistance, which alone without the help of medicines, is said to perform the cure, the usual alexipharmics and cordial medicines being of no service: for at the first sound of the musical instrument, although the sick lie as it were in an apoplectic fit, they begin by degrees, to move their hands and feet, till at last they get up, and fall to dancing, with wonderful vigour at first, for three or four hours; then they are put to bed, refreshed from their sweating a short time, and repeat their exercise with the same vehemence, perceiving no weariness or weakness from it, but professing that they grow stronger and nimbler the more they dance. At this sport they usually spend twelve hours a day; and it continues three or four days, by which time they are freed from all their symptoms; which, nevertheless, attack them about the same time next year; and if they do not take care to prevent this relapse by music, they fall into the jaundice, want of appetite, universal weaknesses, and such like diseases, which are every year increased, if dancing be neglected, till at last they prove incurable. As music is the common cure, so they who are bitten are pleased, some with one sort of it, and some with another; one is pleased with a pipe, another with a timbrel, one with a harp, and another with a fiddle; so that the musicians sometimes makes several essays before they can accommodate their art to the venom; but this is constant and certain, notwithstanding this variety, that they all require the quickest and briskest tunes; and are never moved by a slow dull harmony. While the Tarantati are dancing, they lose in a manner the use of all their senses, are like so many drunkards, do many ridiculous and foolish tricks, talk and act obscenely and rudely, take great pleasure in playing with vine-leaves, with naked swords, red cloaths, and the like; and, on the other hand, cannot bear the sight of any thing black; so that if any by-

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flander happen to appear in that colour, he must immediately withdraw, otherwise they relapse into their symptoms with as much violence as ever. Baglivi, who resided in Italy, and probably had good opportunities of informing himself with respect to this insect, has written a treatise expressly upon the subject: and most medicinal writers mention the distempers arising from the bite thereof, as a thing certain.

But, notwithstanding all these great authorities, and also that of Mr. Addison in his travels through Italy, there is good reason to believe the whole story fabulous, and a vulgar error; for it is treated as such by an Italian physician, in the *Philos. Transf.* and a great many gentlemen of unquestionable veracity, who resided at Taranto many months, and during the time in which the bite of a tarantula is said to be most pernicious, affirm, that there was not a physician in the country, who believed there ever was such a distemper, from such a cause: that among the vulgar there is a tradition, that distempers attended with very extraordinary circumstances, had been excited by the bite of a tarantula; but that no body ever remembers a single instance; and that there is no other spider to be found in that country, different from those which are common in most warm countries.

TARANTOLA-FISH, a species of osmerus, with eleven rays in the pinna ani.

TARE, an allowance for the outside package, that contains such goods as cannot be unpacked without detriment; or for the papers, threads, bands, &c. that inclose or bind any goods imported loose; or, though imported in casks, chests, &c. yet cannot be unpacked and weighed net. Several sorts of goods have their tares ascertained, and those are not to be altered or deviated from, in any case, within the port of London; unless the merchant thinking himself, or the officers of the crown, to be prejudiced by such tares, shall desire that the goods may be unpacked, and the net-weight taken; which may be done either by weighing the goods in each respective cask, &c. net; or, as is practised in East-India goods particularly, by picking out several casks, &c. of each size, and making an average, compute the rest accordingly. But this must not be done without the consent of two surveyors, attested by their hands in the landwaiter's

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books; and in the out-ports, not without the consent of the collector and surveyor. And as to those goods which have not their tares ascertained, two surveyors in London, and the collector and surveyor in the out-ports, are to adjust and allow the same, in like manner. Sometimes the casks, &c. are weighed beyond sea; before the goods are put in; and the weight of each respective cask, &c. marked thereon, as is usual for most goods imported from the British plantations, or else inserted in the merchant's invoice; in which case, if the real invoice be produced, and the officers have satisfied themselves, by unpacking and weighing some of them, that those weights are just and true, they do them, after having reduced them to British weight, esteem them to be the real tares, and pass them accordingly. But the unpacking goods, and taking the net weight, being supposed the justest method, both for the crown and merchant, it is usually practised in the port of London, in all cases where it can be done with conveniency, and without detriment to the goods.

TARGET, a kind of shield or weapon of defence, made use of by the ancients.

TARIF, or **TARIFF**, a table or catalogue, containing the names of different sorts of merchandize, with the duties to be paid, as settled by authority, amongst trading nations.

TARPAULIN, a piece of canvas, well tarred over, to keep out the rain from any place. The term is also used in derision to a person bred at sea, and educated in the mariner's art.

TERRACE, or **TERRACE**, a kind of plaster or mortar. See *Terrace*.

TARSO, in the glass trade, a white kind of stone, used instead of sand, for the finest crystal. See *Glass*.

TARSUS, in anatomy, the space between the bones of the leg and the metatarsus, consisting of seven bones, viz. the astragalus, or talus, calcaneum, navicular, three ossa cuneiformia, and the cubiforme.

TARIUS is also a name given, by some anatomists, to the cartilages which terminate the palpebræ, or eye-lids, and from which the cilia or hairs arise. They are exceedingly thin and fine, which makes them light and flexible.—Their form is semi-circular; that of the upper eye-lid is somewhat longer than that of the under: they serve alike to close the eyes.

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TARTANE, a kind of bark used for fishing and carriage: they are stufh fore and aft, and commonly use oars. They are plenty in the Mediterranean: they have only a main-mast and a mizen: their sails are triangular. When they put up a square sail, it is called a sail of fortune.

TARTAR, an acid concrete salt, thrown off from wines, after complete fermentation, to the sides and bottoms of the casks; of a red or white colour, and more or less drossy, according to the colour and quality of the wine. The white is generally purer than the red: both kinds, when purified, are exactly the same. This salt is one of those which are most difficultly dissoluble in water, being scarcely affected by it in the cold, and requiring ten or twelve times its own weight when assisted by a boiling heat. From this saturated solution the tartar begins to separate almost as soon as the boiling ceases. If the quantity of water is greater, as about twenty times the weight of the salt, it continues long enough suspended to be passed, with due care, through a woollen strainer or a filter. The filtered liquor appears limpid and colourless, whether the tartar made use of was red or white: if hastily cooled, the salt separates in small grains like sand; but if the vessel is closely covered, and the heat very leisurely diminished, it shoots into semitransparent white crystals: if the filtered liquor be kept boiling, a thick skin forms on the surface, which, being taken off with a perforated wooden skimmer, is succeeded by fresh cuticles, till the whole of the salt is thus formed into what is called *creme of tartar*. The refining of tartar is practised, in the way of trade, chiefly about Montpellier, from whence the shops are generally supplied both with the crystals and *creme*; the process being so troublesome, and requiring so large conveniencies, that it is scarcely ever attempted here. The purer sort of white tartar, unrefined, especially that of Rhenish wine, is, for many purposes, particularly for combinations with other bodies, not inferior either to the *creme* or crystals. Pure tartar, in doses of half a dram, or a dram, is a mild cooling aperient: two or three drams gently loosen the belly; and six or eight prove moderately cathartic. Its acidity and laxative power are its medical characters.

Tartar, dissolved in water, effervesces with fixed alkaline salts, and saturates

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of the vegetable alkalies near one third its own weight. The compound salt, resulting from their union, is a neutral one, more purgative than the tartar itself, and far easier of solution, whence its name, *soluble tartar*. This salt is prepared, either by boiling the refined tartar in ten times its weight of water till it is dissolved, and then dropping in strong alkaline ley; or by dissolving the alkali in boiling water in the proportion of a pound to a gallon, and then adding the tartar, till a fresh addition occasions no further effervescence: the liquor is then filtered while hot, and either crystallized, or evaporated to dryness. As this salt difficultly crystallizes, inspissation to dryness is the most convenient method; and in this case, to secure the perfect neutralization of the salt, the tartar should be made to prevail at first, and the liquor suffered to cool a little before filtration, that the redundant tartar may concrete and separate from it.

* **TARTARUS**, among the pagans, the abode of wicked souls. The poets represent it as a deep pit, surrounded with walls and gates of brass. On approaching these infernal mansions, the first person who appeared was Charon, a fat, ragged, old man, whose office was to ferry the souls of the deceased over the waters of Acheron, and whose fare was never less than the value of a halfpenny, nor more than three, which were put into the mouths of the persons interred: but as to the bodies who were denied funeral rites, their ghosts were forced to wander an hundred years on the banks of the river before they were allowed a passage. After crossing the Acheron, appeared Cerberus, a monstrous three-headed dog, who guarded the gloomy regions, fawned upon all who entered, and devoured those who attempted to get back. Tartarus was also encompassed with three other rivers, Cocytus and Styx, which had the power of bestowing forgetfulness, and Phlegethon, whose waters are represented as streams of fire. After passing these rivers, there were two roads, one of which led to the place of torment, and the other to the Elysian fields; and at the separation of these roads was the tribunal, where the three judges, Minos, Rhadamanthus, and Aeacus decided the fate of all the souls that came thither, according to their conduct in life. There Ixion was seen fixed on his wheel; Sisyphus eternally rolling a stone to the top of a mountain; Tantalus

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has parched with thirst, and famished with hunger; the Belides filling a leaky vessel, &c.

* **TARTARY, GREAT**, is about a third part of all Asia, and is about 1500 miles from E. to W. and at least 125 from N. to S. being seated between 40 and 80 degrees of north latitude. It was anciently called Scythia, and is parted in two by the mountains called Imaus. As the ancient Scythians did not continue within any bounds, and as they made several conquests in Europe, it was divided into Asiatic and European Scythia. The last king of the Scythians was called Uegham, and was vanquished in 1212 by a rebel called Chingis-Khan, and then this country lost its name, and was called Tartary. European Tartary, as well as Tartary in Turkey, is seated near the Black Sea, and Muscovite Tartary near the Caspian. Asiatic Tartary is separated from Europe by two large rivers, called the Oby and the Volga. Besides this, there is the Geniska, the Lena, and the Amur, or Saghalien-Oula, towards the east. It is very difficult to give a true division of the country, because authors are not agreed in this particular.

TASSEL, a sort of pendent ornament at the corners of a cushion, or the like. In building, tassels denote those pieces of board that lie under the ends of the mantle-trees.

* **TASSO, TORQUATO**, a celebrated Italian poet, was born at Sorrento, in the kingdom of Naples, the 11th of March 1544. He studied at Padua, and distinguished himself by his poetic talents. He attended the pope's nuncio into France, in the reign of Charles IX. and by his merit obtained the esteem of that monarch; after which he returned to Ferrara, where he published his famous poem entitled Jerusalem delivered, which he had finished in France, in the abbey of Chalis. He composed other ingenious pieces, and was the first who introduced shepherds on the stage, by writing his *Aminta*, which has served as a model for pastoral comedies. Tasso involved himself in some troubles at Ferrara, and in that city was thrown into prison. He was there also in danger of losing his senses, from an extravagant passion he had conceived for Eleonora D'Est, the sister of Alphonso duke of Ferrara. The rest of his life was a continual train of misfortunes. He lived some time at Pavia, went at length to Naples, and was invited to Rome by cardinal Aldobran-

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dini, nephew to pope Clement VIII. and died in that city in the year 1595, aged 51. His poems have acquired him an immortal reputation. The principal of them are, 1. His Jerusalem delivered. 2. His Jerusalem conquered. 3. His Rinaldo. 4. The Seven Days of the Creation. 5. The tragedy of Torimond. 6. *Aminta*, &c.

TASTE, Savour, in physiology, a peculiar sensation, excited by means of the organs of taste, viz. the papillæ on the tongue. The tastes of bodies depend on a certain determinate magnitude of their particles, adapted to excite different sensations by means of the papillæ of the tongue. Savours, which are the objects of the taste in general, proceed chiefly from the saline parts which are found in all matters, whether animal or vegetable, which we take either as food or physic. These little angular pungent bodies are fitter than others to penetrate even to the immediate organ, and to make themselves perceived there: we may judge of them by putting a grain of pure salt, of any kind whatever, upon the tongue, where it will make a very strong impression; and their analysis discovers, that of all mixed bodies, those that affect the organ most, are such as abound most in salts. See *Salt*.

The most simple favours, and upon which men are more generally agreed, are those wherein the salts are the least mitigated by the mixture of other matters. Every one knows what is meant by salt, sour, sweet, bitter, harsh, &c. These different sensations are so remarkable that they are presently distinguished; they are; as it were, the basis of all others, which become so much the more difficult to describe and express, the more they recede from their primary simplicity. The bitterness of coffee, for example, corrected by the sweetness of sugar, produces a mixed sensation; the juice of fruits, mingled with spirit of wine, takes a new taste: the taste of victuals changes almost entirely, and is disguised a thousand different ways, by that infinite number of preparations and mixtures, which the present age has rendered an important art.

TASTE is also used, in a figurative sense, for the judgment and discernment of the mind.

We constantly hear talk of good and bad taste, without well understanding the meaning of these terms: in effect, a good taste seems, at bottom, to be little

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else than right reason, which we otherwise express by the word judgment. Mad. Scudery and Mad. Dacier call good taste a harmony between the mind and reason; and according as that harmony is more or less just, the person has more or less of this taste.

TAT-TOO, q. d. a beat of a drum at night, to advertise the soldiers to retreat or repair to their quarters in their garrison, or to their tents in a camp.

TAURUS, the bull, in zoology. See *Bull*.

TAURUS, in astronomy, one of the twelve signs of the zodiac, the second in order, consisting of 44 stars, according to Ptolemy; of 41, according to Tycho; and of no less than 135, according to the Britannic catalogue.

TAUTOLOGY, in rhetoric, a needless repetition of the same thing in different words.

TAWING, the art of dressing skins in white, so as to be fit for divers manufactures, particularly gloves, &c. All skins may be tawed; but those chiefly used for this purpose are lambs, sheep, kids, and goat skins.

TAX, a tribute rated upon every town, which formerly used to be paid annually into the king's exchequer, but now not without consent of parliament: it differs from a subsidy in this, that it is always certain as set down in the exchequer book, and in general levied of every town, and not particularly of every man, &c. The ancient way of levying taxes was by tenths and fifteenths, afterwards by subsidies and royal aids, and at length by a pound rate; the former of these were all upon the person and personal estate, but the last upon lands and rents. In the late reigns, a land-tax has been annually granted of two, three, or four shillings in the pound, according to present exigencies, to be levied by commissioners on the several counties, cities, towns, &c. And in respect of this tax, the tenants or occupiers of the land are to be charged or assessed, and the same deducted out of the rent due to the landlords; and if any persons refuse to pay what they are rated; the collectors in every parish may levy it by distress and sale of their goods; but in case they are over-rated, they may be relieved by an appeal to the commissioners, who have power to charge the overplus on others, as they shall see cause; or where there appears to be a deficiency, they may make a re-assessment; &c.

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TAXUS, the yew-tree, in botany, a genus of plants, without any corolla. The calyx of the male flower is composed of three leaves; the stamina are numerous; the seed is single, and surrounded by an undivided baccated calyx; the tree is very slow in growing, but there are many very large ones upon some barren cold soils in divers parts of England; the timber is much esteemed for many uses.

These trees may be easily propagated by sowing their berries in autumn, as soon as they are ripe, upon a bed of fresh undunged soil, covering them over about half an inch thick with the same earth.

* **TAY**, a pretty large river of Scotland, which rises from the loch, or lake of Tay, in the shire of Breadalbin; and running E. through Athol, afterwards turns S. E. dividing the counties of Perth and Angus from Strathern and Fife, falling into the frith of Tay.

TEA, the leaf of an oriental shrub, called by Caspar Bauhine, *Chaa herba* in Japonia; by Breynius and Ray, the *Sinensium sive t's-ja Japonensibus*; by Kämpfer, *Thea frutex*, &c. "The tea shrub, with leaves like those of the cherry tree, flowers like those of the dog-rose, and a fruit composed of one, two, and for the most part, three berries."

This plant comes the nearest, in its general appearance, to the dog-rose, but is smaller, and without prickles. Dr. Cleyer, who lived some time in the East Indies, sent several specimens to Simon Paulli in Denmark, and Dr. Mentzel in Berlin; of which figures may be seen in the *Acta Hassinientia*, and the German *Ephemerides*.

Tea was first brought into Europe by the Dutch East India Company, early in the last century; and a quantity of it was brought from Holland by lord Arlington and lord Ossory, in 1666. It presently afterwards became universal, and sold for 3 l. a pound.

Only one species of the tea-plant is as yet known; the differences in this commodity, as brought to us, proceeding from a difference in the climate, soil, age, method of collection and curation: some indeed mention a single and a double flowered sort, but of this we have no certainty.

It is said by some to be a native of China only, by others both of China and Japan; others add a third country, namely, Siam; and suppose, not without probability, that the Japonic name *Tsia* is derived from thence. Thus much is certain,

tain, that at present it is regularly cultivated in different provinces of Japan and China, but does not in all prove of equal goodness: Fisien in Japan, and Nankin in China, produce the best.

The Chinese plant whole fields with tea; the Japanese only the borders of fields fronting the south. From six to a dozen of the berries are planted together, as they are very apt to fail, and covered with dung and earth: it is said, that they are three years in coming up, and that they are carefully covered in the winter with straw. After a certain number of years, which Kämpfer limits between seven and ten, appear the admired leaves: after these have been gathered, the plant is either cut down, and new shoots expected from the root, or extirpated and renewed from seed. As the berries are extremely apt to spoil, inasmuch as to require being planted quite fresh in their native climate, and as the shrub does not bear being removed entire, there are little hopes of our being ever able to introduce it into Europe; nor would it, probably, in these colder climates, prove equal in quality to the Chinese, since even in China and Japan it proves greatly different in different provinces.

If the winter does not prove very severe, the leaves come forth in February, and about the end of this month, or the beginning of next, the first collection is made. These early tender leaves are the true Imperial, called also improperly bloom-tea; but they cannot be the sort to which the Dutch give that name, as being sold upon the spot, to the princes of the country, for vastly more than the common bloom tea is sold for in Europe. About the end of March, or the beginning of April, the second and most considerable crop is gathered: a large linen cloth is stretched over the bush, to defend from the sun not only the gatherers, but the leaves themselves, lest they should dry too fast, and lose their flavour. The leaves are picked one by one, so curiously, that the most industrious can scarcely collect four pounds in a day. They are commonly divided into four sortments; of which the smaller upper ones are the best, the larger lower ones the worst, and the intermediate of a middling goodness. The third collection is in the end of April, or beginning of May: this likewise affords different sorts, which are those mostly brought into Europe: the very best sort which we meet with here, called imperial tea, is but the lower

leaves of the second crop. About the end of May, all the leaves on the plant are gathered promiscuously, without sorting, and sold about the streets to the poorer people; these being the worst of all, and unfit for being cured in the Chinese manner.

The Japanese, who swallow their tea in substance along with its infusion, dry it hastily in iron pans over the fire, and grind it into powder. The Chinese, on the other hand, are very curious of preserving the leaves entire, and roll them up that they may be less apt to break in carriage. So soon as gathered, they are brought into an apartment furnished with a number of little furnaces, each of which is covered with a smooth iron plate. The leaves are spread upon the plates, and kept rolling with the hands, in one direction, till they become moderately dry, and begin to curl up about the edges, when they are immediately swept off upon tables covered with smooth close mats, on which one person continues to roll them over and over, whilst another fans them, that they may cool hastily, and retain the curl. This process is repeated two or three times or oftener, according as the leaves are disposed to unbend upon standing. If exsiccated without artificial heat, or by a very soft one, they rarely take the curl, and never hold it.

Meiſter relates, that the leaves are put into a hot kettle just emptied of boiling water: and that in this they are kept closely covered till cold, and then committed to the hot plates: according to Lemery, they are held in the steam of water. But Kämpfer mentions nothing of all this; and if any such thing is practised in regard to green tea, it is to be supposed it is only for softening such of the leaves as have happened to grow too dry, and would break in the curling. Boerhaave pretends that the preparers employ green vitriol for improving the colour of the tea; this must certainly be false, because green vitriol, instead of heightening the green colour of tea, changes it to an inky blackness.

Thus much of the green tea. With regard to bohea, we have not been able to meet with any satisfactory account, either in books, or from the communication of merchants, of both which great numbers have been consulted. Kämpfer, and Dr. Cunningham, physician to the English settlement at Chusan, affirm, that it is the leaves of the first collection; but

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but this must certainly be a mistake, as all the travellers agree that none of the first crop is brought into Europe, but that is all reserved for the princes of the land, and sold at an immense price in China itself; whereas bohea comes over in large quantity, and is cheaper than the second and third crops, if not than the fourth also. Possibly a particular kind of bohea is made from the first crop, for the use of the nobility; and our bohea, prepared in imitation of that, from the third and fourth collections, or perhaps from the earlier growths also in those provinces where the plant does not come to such perfection as to afford a good green tea. The dark-brownish colour, and rose flavour, observed in this kind of tea, I hold, with Sigesbeck, to be artificial. The method of curation described by Meister, which certainly is in general not practised for the green, probably is for the bohea, which receives, perhaps, in the Kettle, both its tincture and its flavour. This at least is certain, that by a similar process good bohea may be made among ourselves; a specimen of which I have exhibited to a numerous audience. Some of the dealers in this commodity, in England, are not ignorant that certain European leaves; particularly those of the dog-rose and cherry-tree, may be so coloured and prepared, as to pass for good bohea. But I forbear to say any thing further of this manufacture, lest a handle should be given for new abuses.

The Japan tea has been observed to be of a clearer green colour than the Chinese, and to have its leaves smaller; but which of the two is the best has not hitherto been determined, some preferring the one, and others the other: this controversy does not much concern us, the Chinese being the only one brought into Europe. In China, tea is divided into a great number of different sortments: there are sixteen or twenty of the green leaves, from the difference in the collection only; and these are further multiplied, when the leaves are dry, by picking out such as have miscarried in the preparation. Among us, there are three principal kinds of green, and five of bohea: from what province they are brought, of what crop they are the produce, and to which of the Chinese sorts they belong, is unknown: they have all names, but these are merely arbitrary, and serve only for the convenience of the dealer. The best of the green teas is

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called bing, imperial and bloom tea. *Thea imperialis folio amplo laxo* of Dale: the second best hyion, *Thea viridis optima folio oblongo* Dal: the third or worst, singlo, *Thea viridis folio minore* Dal. Of bohea (*Thea fusca folio ad nigredinem vergente*) the sorts are ordinary, pecco, congo, camho, and fou-chong; of which the first is the worst, and the last the best.

The Chinese are extremely curious and cleanly in every branch of the tea manufacture. They gather the leaves, as I have been well assured, with gloves made of a thin kind of leather. The workmen employed in the curation are restrained, for a fortnight before, from flatulent foods, and whatever might endanger communicating any ill flavour. The tea, when cured, is packed up in large vessels made of a mixture of lead and tin, called calin, or in wooden chests lined with this composition, or in canisters of tinned plates foldered with the same, so tight, that they may be kept occasionally under water.

As soon as tea became known in Europe, with its uses among the Chinese, all the European nations thirsted after it. Its great price at that time confined it to the rich; whence the learned were induced to examine the European plants, with a view to discover a cheap succedaneum to it. The most celebrated of our substitutes is veronica, on which Hoffman and Joh. Franchus have written particular dissertations. The leaves of the red whortle-berry and rose bush are at present in greater esteem, and come nearer to the taste of the true tea than any of the other plants that have been employed for this purpose, as betony, nettles, agrimony, coltsfoot, eyebright, strawberry, scabious, cow-slips, golden-rod, cherry-tree, peach-tree, wall rue, sharp-leaved plantane, sanicle, liverwort, lungwort, brankurline, baum, sage, rosemary, &c. It must be acknowledged that these plants are possessed of considerable virtues, greater in particular cases than any that tea can pretend to; yet still they want the chief excellence of tea, that of being a diluent almost universally acceptable.

The oriental tea, as we have already seen, is of two kinds, green and bohea. The first is not only externally green, but likewise imparts the same colour to water; the fresher the tea, the greener is the infusion; its prevailing smell is generally that of violets, or new hay: bo-

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Tea, on the other hand, is externally of a blackish brown colour, gives a brownish tincture to water, and smells of roses. Green tea should be chosen fresh, of a fine colour, not inclining to a yellowish or brownish, which are marks of too great age, well roasted, consisting of entire leaves, thoroughly dry, so as to be friable betwixt the fingers, of a bitterish sub-stringent not ungrateful taste, and a pleasant light smell. When either the violet or hay smell are very strong, we may suspect them to be introduced by art, the leaves having but little from nature: the first is communicated by putting into the canisters a little Florence orris root; the latter, by placing the tea for a few days, wrapt in papers, among new made hay; this leaf being remarkably susceptible of any kind of flavour. There are other abuses common among the Dutch; as mixing with the tea, leaves of European growth and manufacture; and introducing into the old decayed green a fresh tincture.

The preparation and use of tea as a dietetic liquor, are in general well known. With regard to its medical effects, some have excessively extolled, and others as extravagantly condemned it. Tea is in many cases a very useful liquor; a grateful diluent in health, and a salutary drink in sickness: it attenuates viscid juices, promotes the natural excretions, excites appetite, and proves serviceable particularly in fevers, in immoderate sleepiness after a debauch, and in head-achs arising from that cause: no other plant is known, whose infusion passes off more freely by the excretories of the body, or more speedily excites the spirits. It is not, however, without its inconveniences: in habitual colics it is found to do harm, and in urinary obstructions it should be sparingly drank: its immoderate use is productive of cacochymic, cachectic, choleric disorders, and weakens the tone of the stomach and nervous system. It is said, when new, to be narcotic, and to disorder the senses; but to lose this quality, in great part, by the exsiccation, and totally by being kept for a year: in the tea countries, it is a principal caution to abstain from it till this period, but in Europe there is no danger of its being used too new.

Some ascribe the good or ill effects observed from the use of tea wholly to the leaves, and others to the water. The simple element has undoubtedly a considerable share in both: it is not, as some

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have supposed, the virtue of the tea-leaf; but the warm aqueous liquor, with the climate and diet, that preserves the inhabitants of China and Japan from calculous and gouty disorders. But on the other hand, that the herb communicates also some peculiar qualities to the liquor, is equally certain: in weak stomachs, a moderately strong infusion of tea, without sugar, generally provokes a puke: an infusion of two or three drams of bohea, in two ounces of water, is a common emetic among the Chinese; and the green is sometimes employed in the like intention among ourselves.

Both the green and bohea teas have an agreeable smell, a lightly bitterish sub-stringent taste, as hath been already observed: with solution of chalybeate vitriol, they strike an inky blackness. They give out their smell and taste both to watery and to spirituous menstrua: to water the green sorts communicate their own green tincture, and the bohea their brown; to rectified spirit they both impart a fine deep green. On gently drawing off the menstrua from the filtered tinctures, the water is found to elevate nearly all the peculiar flavour of the tea, while rectified spirit brings over little or nothing, leaving the smell as well as the taste concentrated in the extract: both extracts are very considerably astringent, and not a little ungrateful; the spirituous most so.

TEARS, a watery humour issuing out at the corner of the eye by the compression of the muscles, serving to moisten the cornea, to express our grief, and even to alleviate it.

TEASEL, or TEAZEL, in botany. This plant is much used by the fullers, cloth-workers, and stocking-weavers, to card or draw out the wool or nap from the thread or ground of several kinds of cloth, stuffs, stockings, &c. in order to render them closer and warmer.

TEBETH, the tenth month of the Jewish ecclesiastical year, and fourth of the civil. It answers to our month of December.

TECHNICAL, expresses somewhat relating to arts or sciences: in this sense we say technical terms. It is also particularly applied to a kind of verses wherein are contained the rules or precepts of any art, thus digested to help the memory to retain them.

TE DEUM, the name of a celebrated hymn, used in the Christian church, and so called because it begins with these words,

words, *Te Deum laudamus*, We praise thee, O God. It is sung in the Romish church, with great pomp and solemnity, upon the gaining of a victory, or other happy event.

TEETH. See *Tooth*.

TEGUMENT, or **INTEGUMENT,** any thing that surrounds or covers another. The common teguments of the human body are the cutis, cuticle, and fat.

TEINTS, and **SEMI TEINTS,** in painting, denote the several colours used in a picture, considered as more or less high, bright, deep, thin or weakened, and diminished, &c. to give the proper relief, softness, or distance, &c. of the several objects.

TELAMON, or **ALAS,** a name given to those figures or half figures of men so commonly used instead of columns or pilasters, to support any member in architecture, as a balcony, or the like.

TELCHINES, in fabulous history, the children of Apollo and Minerva, or, as others say, of Saturn and Aliope. They for some time inhabited the island of Rhodes, whence it took the name of Telchine. They caused hail or rain to descend at their pleasure, and taking the water of the river Styx, sprinkled the earth with it, and made it produce sickness and famine, whence the Greeks called them Alastores, or destroyers. But at last, Jupiter punished them by transforming them into a rock.

TELESCOPE, an optical instrument consisting of several lenses, by means of which remote objects are so magnified as to appear nigh at hand. That the telescope is of a modern invention is most certain; neither does it appear that microscopes, or optic glasses of any kind, were known to the ancients. It is contended, that Alexander de Spina, a native of Pisa, was the first that made the use of glasses known to the world; but our countryman, friar Bacon, who died twenty one years before him, was, in all probability, acquainted with them first; for he wrote a book of perspective, in which he plainly shews that he did not only understand the nature of convex and concave glasses, but the use of them when combined in telescopes; though he no where, in that treatise, discovers the manner in which they are to be put together. The telescope, with the concave eye glass, was first invented by a mechanic of Middleburgh in Zealand, called Z. Johannides, about the year 1590, though

J. Lipperhoy, another Dutchman, is candidate for the same discovery; from whence this sort of telescope is called *tubus Batavus*. Francisus Fontana, a Neapolitan, contends, that he was the first contriver of the telescope composed of two convex glasses, which is now the common astronomical telescope; and Rheita pretends to be the first that rendered that telescope fit for terrestrial uses, by adding two eye glasses to it. The telescope is of two sorts; viz. dioptric, or refracting; or cata-dioptric, by reflection, and refraction conjointly.

Aerial Telescope, is a dioptric telescope, used without a tube, in a dark night; for the use of the tube, is not only to direct the glasses, but also to make the place dark where the images of objects are formed. Huygenius contrived a telescope of this kind for viewing the celestial bodies by fixing the object-glass on the top of a long upright pole, and directing its axis towards any object by means of a silk line coming from the object-glass to the eye-glass below.

TELESCOPICAL STARS, such as are not visible to the naked eye, but discoverable only by the help of the telescope.

TEMACHIS, in natural history, the name of a genus of fossils, of the class of the gypsums, the characters of which are these: it is of a softer substance than many of the other genera, and of a bright and glittering hue.

TEMPERAMENT, among physicians, denotes the same with constitution; or a certain habitude of the humours of the human body, whereby it may be denominated hot, cold, moist, dry, bilious, sanguine, phlegmatic, melancholic, &c. According to Boerhave, moistening, diluting, and temperating substances are a proper diet for persons of a hot and acid temperament; and on the contrary, all heating things are prejudicial to them: whereas in persons of a cold and moist habit, just the reverse of this obtains. To persons of a sanguineous temperament, evacuating and temperating medicines are beneficial, and heating or drastic stimulating things pernicious. Persons of a melancholy temperament are greatly injured by hot, drying, and acrid substances; whereas moistening, desfrigerating, relaxing, emollient substances, and such as gently dissolve without any acrimony, are beneficial to them.

TEMPERAMENT, in music, is the

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rectifying or mending the imperfect records, by transferring to them part of the beauties of the perfect ones.

TEMPERING of Steel and Iron, the rendering them either more compact and hard, or soft and pliant, according as the different uses for which they are wanted may require. This operation consists in plunging them, while red hot, into some liquor prepared for the purpose; sometimes in pure water, as locksmiths, &c. which seldom use any other: and sometimes a composition of divers juices, liquors, &c. is used; which is various according to the manner and experience of the workman; as vinegar, mouse-ear water, the water oozing from broken glasses, foot, salt, oil, &c. To harden and temper English, Flemish, and Swedish steel, they must have a pretty high heat given them, and then be suddenly quenched in water to make them hard: but Spanish and Venetian steel require no more than a blood-red heat before it is quenched. If the steel be too hard or brittle for an edged tool, &c. take it down by rubbing a piece of grind-stone or whet-stone hard upon the work, to take off the black scurf: then brighten or heat it in the fire, and as it grows hotter, you will see the colour change by degrees, coming first to a straw or light gold colour, then to a darker gold colour, and at last to a blue colour. Choose such of these colours as the work requires, then quench it suddenly in the water. The light gold colour is for files, cold chisels, and punches to punch iron and steel: the dark gold colour, for punches to use on brass, &c. the blue colour gives the temper for springs.

The tempering of files and needles is performed after a peculiar manner.

The ancients appear to have had some better method of tempering than any the moderns are acquainted withal; witness their works in porphyry, a stone so hard that none of our tools make an impression upon it. See *Steel*.

TEMPLARS, TEMPLERS, or Knights of the Temple, a religious military order, instituted at Jerusalem, about the year 1118; the origin of which was as follows. Some religious gentlemen put themselves under the government of the patriarch of Jerusalem, renounced property, made the vow of celibacy and obedience, and lived like canons regular. At first, there were but nine of this order, the chief of whom were Hugo de Paganis, and Geoffry of St. Omers. These religious having neither church nor house be-

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longing to the society, king Baldwin gave them an apartment in his palace, which stood over against the south gate of the church dedicated to Our Saviour. The canons of this church gave them part of their street adjoining, upon certain conditions either of rent or service. They had likewise lands given them by the king, the patriarch, and the nobility, for their maintenance; and the business of their character was to guard the roads for the security of pilgrims. For the first nine years, they were confined to the number of nine. After this term, a rule was drawn up for them, and a white habit assigned them by pope Honorius II. And now their numbers were left at liberty, and their estates began to improve. About twenty years after in the popedom of Eugenius III. they had red crosses sewed upon their cloaks, as a mark of distinction; and, in a short time, their number was increased to about three hundred knights, in their convent at Jerusalem; besides great numbers in other parts of Christendom, where their revenues exceeded those of many princes. They took the name of Knights Templars, because their first house stood near the church dedicated to Our Saviour at Jerusalem. This order of knights, after having done many fine and singular actions against the Infidels, was become rich and powerful all over Europe; but the knights abusing their wealth and credit, fell into great disorders and irregularities. Two of them, who were condemned for their crimes, accused the whole order. King Philip the Fair, who hated the Templars, received the depositions of these two informers, acquainted Clement V. with it, and caused all the knights to be apprehended, on the 5th, of October 1307. The king took possession of their house at Paris, and seized all the possessions they had in the kingdom. The pope and the king, having agreed to destroy the order, proceeded against them before ecclesiastical commissioners appointed by the pope. These commissioners met at Paris, in November 1309, to hear the depositions of witnesses, and the defences of the accused. Among the Templars that were brought to Paris, there were seventy-nine, who maintained the innocence of their order. Fifty-nine, who persisted in the denial of what they had confessed before, were delivered over to the secular arm, and condemned to be burnt; which sentence was executed, without St. Anthony's gate, at Paris, in March 1310.

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They were likewise prosecuted in Italy, Spain, and other states. In fine, the pope, by his bull of the 12d of May 1563, given in the council of Vienna, pronounced the extinction of the order of the Templars, united their estates to the order of St. John of Jerusalem, and committed the judgment of particular ones to provincial councils. The king kept two thirds of the moveables of the order, on pretence of the expence he had been in carrying on the process against them. In Arragon, the pope united their estates to the order of Calatrava. However, the king of Arragon reserved to himself seventeen strong places, which had belonged to them. Ferdinand, king of Castile, united to his domain the cities, lands, and other possessions, which they had in his kingdom. Out of their estates the king of Portugal founded the order of the knights of Christ; and in England they were united to the order of the Hospitallers.

It is a question among historians, whether the knights Templars were really guilty of the crimes laid to their charge, or whether the vast estates they were possessed of were not the occasion of their ruin. As to the confession some of them made of their guilt, the advocates for their innocence impute it to the force of racks and tortures.

TEMPLE, a general name for places of public worship, whether Pagan, Christian, or otherwise. But the word, in a restrained sense, is used to denote the places, or edifices, in which the Pagans offered sacrifice to their false gods. Thus we hear of the temples of Jupiter, Apollo, Bacchus, &c.

Temples were built and adorned with all possible splendor and magnificence, partly out of the great respect they bore to the gods, and partly to create an awe and reverence in the worshippers. They were constructed in the manner which was thought most agreeable to the gods, to whom they were dedicated. Thus Jupiter, they thought, took most delight in pillars of the Doric order; Bacchus in the Ionic; and Vesta in the Corinthian: though this rule was not universally or constantly observed. As to the places where temples were built, they made choice of these with a view to the disposition of particular deities. Hence some were erected on the tops of mountains, others in vallies, and others in cities. Those built in the country were generally surrounded with groves sacred to the tu-

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telar deity of the place; and wherever they stood, it was so contrived, that the windows being opened might receive the rays of the rising sun. The most ancient situation was with the front towards the west, and the altars and statues at the east end, it being a custom among the heathens to worship with their faces towards the east. But, in after ages they placed the front of temples towards the east, so as that the doors being open should receive the rising sun. If the temples were built by the side of a river, they were to look towards the banks of it: if near the highway, they were so situated that travellers might have a fair prospect of them, and pay their devotion as they passed by.

Temples, according to the number and difference of their columns, were divided into tetrastyle, prostyle, amphiprostyle, periptere, diptere, &c.

Tetrastyle TEMPLE, a temple that had four columns in front, and as many behind,—as the temple of Fortuna Virilis at Rome.

Prostyle TEMPLE, that which had only columns in its front or fore-side,—as that of Ceres, at Eleusis, in Greece.

Amphiprostyle, or **Double prostyle TEMPLE**.—That which had columns both before and behind, and which was also tetrastyle.

Periptere TEMPLE, that which had four rows of insulated columns around, and was hexastyle, that is, had six columns in front,—as the temple of Honour at Rome.

Diptere TEMPLE, that which had two wings, and two rows of columns around, and was also octostyle, or had eight columns in front,—as that of Diana at Ephesus.

* **TEMPLE**, (Sir William,) a celebrated writer, was the son of Sir John Temple, master of the rolls, and privy counsellor in Ireland in the reign of Charles II. and was born at London, in the year 1629. He discovered from his infancy great abilities, and a fondness for polite literature and the sciences. He was educated at Cambridge, where among other useful learning he made himself a perfect master of the two most useful modern languages, French and Spanish, after which he made a distinguished figure at court, and was sent on several embassies, particularly in 1668 to the States General, when he brought about the triple league between England, Holland, and Sweden. He had a great share in the marriage of the

prince

prince of Orange with the lady Mary, the duke of York's daughter; and was also one of the plenipotentiaries at the peace of Nimeguen in 1678. But the French interest gaining the ascendant at court, he resigned his public employments, and retired into the country, where he lived in retirement, solely employed in study and the cultivation of his gardens. Mr. Swift, afterwards dean of St. Patrick's, Dublin, lived with Sir William as his amanuensis, and assisted in preparing his works for the press. Sir William died toward the end of the year 1700, in the seventy-second year of his age, at Moor-Park, near Farnham in Surry, after his having given directions in his will, that his heart should be buried in a silver box under the sun-dial in his garden, opposite to the window from whence he used to contemplate and admire the works of nature.

TEMPLES, among us, denote two inns of court, thus called, because formerly the dwelling-house of the nights Templars.

TEMPLES, in anatomy, a double part of the head, reaching from the forehead and eyes to the two ears.

TEMPORAL, a term generally used for secular, as a distinction from ecclesiastical. Thus we say, temporal lords, and spiritual or ecclesiastical lords.

TEMPORIS OS, in anatomy, a bone on each side the head, thus denominated from its situation in the temples.

TENAILLE, in fortification, a kind of out-work, resembling a horn-work, but generally somewhat different; for instead of two demi-bastions, it bears only in front a re-entering angle betwixt the same wings without flanks; and the sides are parallel.

TENANT, or **TENENT**, in law, one that holds or possesses lands or tenements of some lord or landlord, by any kind of right, either in fee, for life, years, or at will. The term tenant is used with divers additions.—Thus,

TENANT in Dower, she that possesses lands by virtue of her dower.

TENANT per Statute Merchant, he that holds lands forfeited to him by virtue of a statute.

TENANT in frank Marriage, he that holds lands or tenements by virtue of a gift thereof made to him upon marriage between him and his wife.

TENANT by Courtesy, holds for his life by reason of a child begotten by him of his wife, being an inheritrix, and born alive.

TENANT by Elegit, he that holds by virtue of the writ called an elegit.

TENANT in Mortgage, is one that holds by means of a mortgage.

TENANT by Verge, in ancient demesne, he who is admitted by the rod in court to lands of ancient demesne.

TENANT by Copy of Court-roll, one admitted a tenant of any lands, &c. within a manor, which time out of mind has been demised according to the custom of the manor.

TENANT by Charter, he that holdeth by feoffment in writing or other deed.

TENANT in Capite, or Chief, one who holdeth of the king in right of the crown.

TENANT of the King, he that holdeth of the person of the king.

Joint TENANTS, those who have equal right in lands and tenements by virtue of one title.

TENANTS in common, those who have equal right, but hold by divers titles.

Particular TENANT, he that holds only for his term.

Sole TENANT, he who hath no other joined with him.

TENANT by Execution, he who holds by virtue of an execution upon any statute, recognizance, &c.

TENANT, or TENAN, in heraldry, is used for something that sustains or holds up the shield, or armory, and is generally synonymous with supporter.

TENCH, in ichthyology, the English name of the tinca of modern authors, the fullo and gnapheus of the ancients.

It is, according to the Ardetian system, a species of the cyprinus, and distinguished by that author by the name of the blackish, mucous, or slimy cyprinus, with the end of the tail even.

This is a delicately tasted fish, though it lives in foul water, and seems to feed very coarsely. It is always found in the muddiest parts of ponds, and where there are most weeds.

The slime of the skin of this fish is said to be of a healing nature, and to cure all fresh wounds; and it is pretended that the other fish know this property in it, and always apply to the tench when wounded. Whether their opinion be true or false, the tench has obtained by it the name of the fishes physician. The pike is said to pay such respect to this fish, on this account, that he never seizes him. But these are things easier to be imagined and said than proved; and, if it should prove that the pike does not eat the tench, it may be resolved into a much more natural

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rural cause, by supposing the slime of the tench too disagreeable in his stomach to suffer it.

The season for angling for tench is in June, July, and August. The time of their biting is early in the morning, or late in the evening, and in hot weather, all night long. The favourite bait for the tench is a large red worm, and they will take this much more greedily, if it be dipped in tar, after it is put on the hook. There are several sorts of paste also that he bites very well at, particularly one made of brown bread and honey, with an admixture of tar. All pastes that have any of the strong-scented oil in them, are also good baits. Other baits are the cad-worm, lob-worm, flag-worm, green gentle, marsh worm, or soft-boiled bread corn. All these will do very well at a proper season.

When any number of tench are to be taken out of a muddy pond, where they will not bite freely at the hook, the method is to take a very good and large casting-net, well leaded, and with the meshes from the crown to a full yard and a half, not too small; for then if the pond be deep, the fish will strike away before the net gets to the bottom. The place where the net is intended to be thrown, must be made clean from bushes and large weeds with a rake. When the place is thus cleared of any obstacles to the even descent of the net, a bait is to be prepared to draw the fish together, where the net is to be thrown. This bait is to be thus made: put a quarter of a peck of wheat into three quarts of water, send it to an oven, and let it be well soaked: then add to it five pints of blood, and as much bran as is necessary to give it the consistence of a paste. Mix some clay with it, that it may the better hold together; and finally, add a quart of lob-worms chopped to pieces. Let the whole be wrought up into a stiff paste, and rolled into balls of the size of a hen's egg; and let these be thrown into the pond, in the place where the net is to be thrown. At times these, and at times some grains, are to be thrown in: and the place in this manner thoroughly baited for several days. When the fish may be supposed to be very well acquainted with the spot, let a very good baiting be given in the morning, and in the close of the evening let the casting-net be carefully thrown in. When the net is sunk, the mud all about it to be stirred up with a long pole, with

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a fork at the end; the net is to lie half an hour, and the mud to be thus stirred all the time; by this means the tench will be raised, and will be taken in the pulling out the net; but, if the net were to be thrown in and taken out in the common way, there would hardly be one fish taken; for the custom of both tench and carp, when they are frightened, is to plunge their heads up to the eyes in the mud, and thus placed, with their tails erect, any net in the world must draw over them, without a possibility of its entangling them.

TENDER, in a legal sense, signifies as much as to offer or endeavour the performance of any thing, in order to save the penalty or forfeiture incurred by non-performance.

TENDERS, in the sea language, vessels employed to raise seamen for the navy, commanded by a lieutenant of one of his majesty's ships; they likewise attend large ships, and carry stores, &c.

TENDON, in anatomy, that hard, white, extreme part of a muscle, whereby it is fastened to the bone. See *Muscle*.

TENEMENT properly signifies a house; but in a larger sense it is taken for any house, land, rent, or other thing, which a person holds of another.

TENEMENTARY LANDS, such as are held by the tenant, distinguished by that name from the demesne land of the lord, called inland.

* TENERIF, an island of Africa, and one of the Canaries, being the most considerable for extent, trade, and riches. It lies to the south of the island of Salvages, to the W. of Grand Canary, to the N. of the island of Gomera, and to the E. of that of Palma. It is about 45 miles in length, and 20 in breadth, and abounds in wine, fruit, cattle, and game. One part of this island is surrounded by inaccessible mountains, and there is one in particular called the Pike of Tenerif, which may be seen 100 miles off in a clear day; it being one of the highest mountains in the world, and is in the form of a sugar loaf: according to Dr. Halley's tables, it is at least two miles and a quarter high. This island is subject to earth-quakes; and in 1704 there happened one that destroyed several towns, and many thousand people in them. Laguna is the capital town. Long. 15. 28. W. Lat. 28. 30. N.

TENET, or TENENT; a particular opinion, dogma, or doctrine, professed by some divine, philosopher, &c.

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TENNE, TENNY, or TAWNY, in heraldry, a bright colour made of red and yellow mixed; sometimes also called brusk, and expressed in engraving, by thwart, or diagonal strokes or hatches, beginning from the sinister chief, like purple, and marked with the letter T. In the coats of all below the degree of nobles, it is called tenny; but in those of nobles it is called hyacinth; and in princes coats, the dragon's head.

TENON, in building, &c. the square end of a piece of wood, or metal, diminished by one third of its thickness, to be received into a hole in another piece, called a mortise, for the jointing or fastening the two together. It is made in various forms, square, dove-tailed for double mortises, and the like.

TENOR, or TENOUR, the purport or content of a writing or instrument in law, &c. An action of debt brought upon a judgment in an inferior court, where the defendant pleads, *nul tiel record*, no such record, a tenor thereof only shall be certified; and it likewise is the same on certioraris. A tenor of a libel has been held to be a transcript of it.

TENOR, or TENORE, in music, the first mean, or middle part, of that which is the ordinary pitch of the voice, when neither raised to a treble, or lowered to a bass. The tenor is commonly marked in thorough bass with the letter T. This is that part which almost all grown persons can sing; but as some have a greater compass of voice upwards, others downwards, others are confined to a kind of medium, and others can go equally high or low; hence musicians make a variety of tenors, as a low, a high, a mean, a natural tenor, to which may be added, a violin tenor, &c. for instruments. The Italians usually distinguish two kinds of tenor, *tenore primo*, 1^o or P^o, which answers to our upper tenor, and *tenore secondo*, 2^o or II^o, which is our natural tenor, confounding the counter-tenors, &c. under the name of baritono.

TENSE, TIME, in grammar, an inflexion of verbs, whereby they are made to signify or distinguish the circumstance of time of the thing they affirm or attribute. The affirmations made by verbs are different, as to the point of time; since we may affirm a thing is, or was, or will be, hence, a necessity of a set of inflexions, to denote those several times, which inflexions our English grammarians call by a barbarous word *tenses* from the

French *temps*; most other languages call them simply times.

There are but three simple tenses; the present, as I love, *amo*; the preter, preterit, or past, as I have loved, *amavi*; and the future, as I will love, *amabo*. But, in regard, in the preter tense, we may either express the thing as just done, or past, or indefinitely, and barely that it was done; hence, in most languages arise two kinds of preterits; the one definite, marking the thing to be precisely done, as I have written, I have said; and the other indefinite, or aorist, denoting a thing done indeterminately, as I wrote, I went. The future tense admits of the same variety. Besides the three simple tenses, others have been invented, called compound tenses, expressing the relation of simple ones to each other. The first expresses the relation of the past to the present, and is called the preter-imperfect tense, because it does not mark the thing simply and properly as done, but as imperfect; and present with respect to another thing past.

The second compound tense marks the time past doubly, and is therefore called *plusquam* perfect tense, as I had supped, *caenaveram*.

The third compound tense denotes the future, with respect to the past; as I shall have supped, *caenavero*.

The several tenses or times, it is to be observed, are properly denoted in the Greek and Latin by particular inflexions; in the English, French, and other modern tongues, the auxiliary verbs to be and to have, *etre* & *avoir*, are called in.

As to the Oriental languages, they have only two simple tenses, the past and future, without any distinction of imperfect, more than perfect, &c. which renders those languages subject to abundance of ambiguities, which others are free from.

TENSION, the state of a thing bent, or the effort made to bend it. Animals only sustain and move themselves by the tension of their muscles and nerves. A chord or string gives an acuter or deeper sound, as it is in a greater or less degree of tension.

TENT, a pavilion or portable lodge.

TENT, in surgery, a roll of lins worked into the shape of a nail, with a broad flat head. Tents differ in thickness and length, according to the size of the wound for which they are intended, and are chiefly used in deep wounds and ulcers.

ulcers. They are of service not only in conveying medicines to the most intimate recesses and sinusses of the wound, but to prevent the lips of the wound from uniting, before it is healed from the bottom; and by their assistance, grumous blood, foldes, &c. are readily evacuated. They ought to be made extremely soft, that the cure of the wound may not be retarded by the pain they would otherwise bring on.

There is another kind of tents made of linen-rags not scraped, and worked up into a conical form, to the basis of which is fastened a long thread; the apex of this tent must be a little unravelled, to make it softer, lest it may become painful: the thread is fastened to the basis, that the tent may be recovered with the greater ease, if, by any accident, it should be forced into the cavity of the thorax or abdomen; for the tents we now describe, are chiefly used to keep open wounds that penetrate into the cavity of the thorax or abdomen, in order to make way for the proper discharge of blood, matter, &c. There is a third sort of tents, which serve, not only to keep open, but to enlarge, by degrees, the mouth of any wound or ulcer which shall be thought too strait; that, by this means, a free passage may be procured for the blood and matter that were confined, and that proper medicines may find a more ready admittance. These tents are made either of sponge, prepared in a certain manner; or of dried roots of gentian, calamus aromaticus, &c. for their substance imbibe the matter which flows to them, and being presently enlarged dilate the lips of the wound.

TENTER, TRIER, or PROVER, a machine used in the cloth manufactory, to stretch out the pieces of cloth, stuff, &c. or only to make them even and set them square.

TENURE, in law, the manner or condition wherein a tenant holds lands or tenements of his lord; or the services performed to the lord, in consideration of the use and occupancy of his lands.

TEPID, in natural history, a term used by writers on mineral waters, to express such of them as have a less sensible cold than common water.

TREDO, a name given by naturalists to a species of sea-worm, which eats its way into the bottoms of ships, lining the hole it makes with a kind of shelly matter.

TERES, in anatomy, a name given to two muscles of the arm; one is called

teres major, and is one of the depressor muscles, which has its origin at the lower angle of the scapula, and its termination three fingers below the head of the humerus: the other is called teres minor, being one of the abductor muscles, and having its origin at the inferior costa of the scapula; this, together with the infraspinatus, properly forms one conjunct muscle, having at the extremity only a single tendon, which is inserted into the posterior part of the neck of the humerus.

TERM, in general, signifies much the same with boundary or limit.

TERM, in law, is generally taken for a limitation of time or estate; as a lease for term of life, or years, which is deemed a chattel real.

Term, however, is more particularly used for that time wherein our courts of justice are open; in opposition to which, the rest of the year is called vacation. There are four of these terms in a year, viz. 1. Hilary-term, which begins on January 23, but if that is a Sunday, the next day, and ends on Feb. 12. 2. Easter term, which begins the Wednesday fortnight after Easter-day, and ends the Monday next after Ascension-day. 3. Trinity-term, which begins on the first Friday after Trinity-Sunday, and ends the Wednesday fortnight after. 4. Michaelmas-term, which begins on Nov. 6. and ends the 28th of the same month. It has been held, that courts do not sit except in term-time, as to giving of judgments, &c. and every term there are four days, thus distinguished; that is, the essoin-day, the day of exceptions, the day of return of writs, and day of appearance. On the essoin-day the term is said to begin, when one judge sits in each of the courts of Westminster, in order to take and enter essoins: but it is not till three days afterwards, that all the judges sit for the dispatch of business. There are likewise different returns in different terms, some having more, some fewer: and as, in the king's bench, all returns are to be made on some particular day of the week in each term, care must be taken not to make the writs out of that court returnable on a non-judicial day, as Sunday, All-Saints, &c.

Oxford-TERMS. Hilary, or Lent-term begins on Jan. 14. and ends the Saturday before Palm-Sunday. Easter-term begins the tenth day after Easter, and ends the Thursday before Whit-Sunday. Trinity-term begins the Wednesday after Trinity-Sunday, and ends

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after the act, sooner or later, as the vice-chancellor and convocation please. Michaelmas-term begins on Oct. 10. and ends Dec. 17.

Cambridge-TERMS. Lent-term begins on Jan. 13. and ends the Friday before Palm-Sunday. Easter-term begins the Wednesday after Easter-week, and ends the week before Whit-Sunday. Trinity-Sunday begins the Wednesday after Trinity-term, and ends the Friday after the commencement. Michaelmas term begins Oct. 10. and ends Dec. 16.

Scottish TERMS. In Scotland, Candlemas-term begins Jan. 23. and ends Feb. 12. Whitsuntide-term begins May 25. and ends June 15. Lammas-term begins July 20. and ends Aug. 8. Martinmas-term begins Nov. 3. and ends Nov. 29.

TERM, in grammar, denotes some word or expression of a language.

TERM in the arts, or TERM of art, is a word which, besides the literal and popular meaning which it has, or may have, in common language, bears a further and peculiar meaning in some art or science.

TERM, in logic. A proposition is said to consist of two terms, i. e. two principal and essential words, the subject, and the attribute.

TERMS of an Equation, in algebra, are the several names or members of which it is composed, and such as have the same unknown letter, but in different powers or degrees: for if the same unknown letter be found in several members in the same degree or power, they shall pass but for one term.

As in this equation, $xx + ax = bb$; the three terms are xx , ax , and bb . Moreover, in this, $x^4 + x^3 + x^2 + \frac{ab}{cd}x + \frac{fp}{rs}x + yy = 0$; the terms are

x^4 , x^3 , x^2 , $\frac{ab}{cd}x$, $\frac{fp}{rs}x$, and yy .

Where $\frac{ab}{cd}x$, and $\frac{fp}{rs}x$, are the same terms; and the first term in any equation must be that where the unknown root hath the highest dimensions; and that term which hath the root in it, of one dimension of power lower, is called the second term, and so on.

TERMS of Proportion, in mechanics, are such numbers, letters, or quantities, as are compared one with another.

Thus, if $\frac{2}{a} : \frac{4}{b} :: \frac{8}{c} : \frac{16}{d}$, then a, b, c ,

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d , or 2, 4, 8, 16, are called the terms, a being the first term, b the second term, &c.

TERMS, or COURSES, in medicine, the menses.

TERMINATION, in grammar, the ending of a word, or last syllable thereof. It is the different termination of one and the same words on different occasions, that constitute the different cases, numbers, tenses, and moods, &c.

* TERMINUS, in pagan worship, a deity among the Romans, who presided over the stones or land-marks, called Termini, which were held so sacred that it was deemed sacrilege to move them, and as the criminal became devoted to the gods, it was lawful for any man to kill him. The worship of this deity was instituted by Numa Pompilius, who, to render land-marks, and consequently the property of the people, sacred, erected a temple on the Tarpeian mount to Terminus.

TERRA FIRMA, in geography, is sometimes used for a continent, in contradistinction to islands.

Thus Asia, the Indies, and South America, are usually distinguished into terra firmas and islands.

TERRA FILIUS, son of the earth, a student in the university of Oxford, formerly appointed, in public acts, to make jesting and satirical speeches against the members thereof to tax them with any growing corruptions, &c.

TERRACE, or TERRAS, a walk or bank of earth, raised on a proper elevation, so that any person who walks round a garden, may have a better prospect of all that lies round him; and these elevations are so necessary, that those gardens which are flat, and that have them not, are deficient. When the terraces are rightly situated, they are great ornaments, especially when they are well made, and their ascent not too steep.

TERRACE is also applied to the roofs of houses that are flat, and whereon one may walk; as also to balconies that project.

TERRAQUEOUS, in geography, an appellation given to our globe, because consisting of land and water. See *Earth* and *Sea*.

TERRE-PLEIN, in fortification, denotes the horizontal superficies, or top, of the rampart, between the inferior talus and the banquette. It is thus called, as lying nearly level, with only a little slope inwardly, to bear the recoil of the cannon.

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TERRELLA, an appellation given to a loadstone, when turned into a spherical figure, and is placed so, that its poles and equator, &c. correspond to the poles and equator of the world; as being a just representation of the great magnetical globe which we inhabit. Such a terella, if nicely poised and placed in a meridian, it was imagined, would turn about its axis once in twenty-four hours; but experience has shewn this to be a mistake.

TERRESTRIAL, something partaking of the nature of earth, or belonging to the globe of the earth: thus we say, the terrestrial globe, &c.

TERRITORY, in geography, an extent or compass of land, within the bounds, or belonging to the jurisdiction of any state, city, or other subdivision of a country.

TERTIAN, in medicine, an ague, or intermitting fever, the fits of which return every third day; that is, there are two fits in three days, the day intervening being without any fit at all. See the articles *Quartan* and *Intermittent*.

TER TIA RE a great Gun, in gunnery, is to examine the thickness of the metal at the muzzle; whereby to judge of the strength of the piece, and whether it be sufficiently fortified or not. This is usually done with a pair of calibr compasses, and if the piece be home-bred, the diameter less by the height, divided by 2, is the thickness at any place.

TEST, in metallurgy, a vessel of the nature of the coppel, used for large quantities of metal at once.

TEST-ACT, a statute 25 Car. II. cap. 2. which requires all officers, both civil and military, to take the oaths and test, viz. the sacrament, according to the rites and ceremonies of the church of England; for the neglect whereof, a person executing any office mentioned in that statute forfeits the sum of 500 l. recoverable by action of debt.

TESTACEOUS, in natural history, an epithet given to a species of fish, which are covered with a strong thick shell, as tortoises, oysters, pearl-fish, &c. In strictness, however, testaceous is only applied to fish whose strong and thick shells are entire and of a piece: those which are soft, thin, and consist of several pieces jointed, as the lobster, &c. being called crustaceous. But, in medicine, all preparations of shells and substances of the like kind, are called testaceous powders: such are powder of crab's

claws and eyes, hartshorn, pearl, &c. Dr. Quincy and others suppose the virtue of all testaceous medicines to be alike; that they seldom or never enter into the lacteals, but that the chief of their action is in the first passages; in which case they are of great use in absorbing acidities. Hence they become of use in fevers, and especially in rectifying the many distempers in children, which generally owe their origin to such acidities.

TESTAMENT, in law, a solemn and authentic act, whereby a person declares his will, as to the disposal of his estate, effects, burial, &c.

The word is formed from the Latin *testamentum*, which the lawyers usually derive from *testatio mentis*.

TESTATOR, or **TESTATRIX**, the person who makes his or her will and testament.

TESTES, in anatomy, two white, soft, oval bodies serving for generation; usually called, diminutively, testicles.

TESTES of the Brain, are two little, round, hard bodies between the third and fourth ventricle, near the pineal gland. See *Brain*.

TESTICLE, *Teslis*, in anatomy, a double part in male animals, serving for generation. See *Generation*.

Some also give the name of testes muliebres, to the ovaries of women.

TESTICULATED, among botanists, an appellation given to roots composed of two tuberoso knobs, resembling testicles: such are those of orchis, &c.

TESTIMONIAL, a kind of certificate, signed either by the master and a fellow of the college where the person last resided; or by three, at least, reverend divines, who knew him well for three years last past, giving an account of the virtues, uniformity, and learning of the person.

Testimonial is also a certificate, under the hand of a justice of peace, testifying the place and time when a soldier or mariner landed, and the place of his dwelling, &c. whither he is to pass.

There is also another kind of testimonial for the clergy, made by persons present, that a clergyman has in all things complied with the act of uniformity; and to certify, that the clerk has performed what the law requires on his institution and induction.

TESTIMONY, the same with evidence.

TESTUDO, in zoology, a genus of amphibious animals, with four legs and a

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tail, and the body covered with a firm shell. This genus comprehends all those animals known in English by the names of tortoises and turtles; of which there are a great many species, some with four toes on each foot, others with five toes on the fore feet, and four on the hinder ones; and others distinguished by other peculiarities, particularly the compartments of their shells, some being divided into irregular spaces, and others beautifully tessellated.

TESTUDO, in the military art of the ancients, was a kind of cover or screen which the soldiers, e. gr. a whole company, made themselves of their bucklers, by holding them up over their heads, and standing close to each other. This expedient served to shelter them from darts, stones, &c. thrown upon them, especially those thrown from above, when they went to the assault.

TETANUS, in medicine, a convulsive motion that makes any part rigid and inflexible. See *Convulsion*.

TETRADIAPASON, a musical chord, otherwise called a quadruple diapason, or eighth.

TETRADYNAMIA, in botany, a class of plants, whose flowers have four of their stamina of more efficacy than the rest: these are always known by having the four efficacious stamina longer than the rest. The tetradynamia of Linnaeus include those called by Tournefort cruciformes, and by Ray, siliquosæ, and siliulosæ.

TETRAEDRON, or **TETRAHEDRON**, in geometry, one of the five regular or platonic bodies or solids, comprehended under four equilateral and equal triangles. It is demonstrated by mathematicians, that the square of the side of a tetraedron is to the square of the diameter of a sphere, wherein it may be inscribed, in a subseqüalateral ratio: whence it follows, that the side of a tetraedron is to the diameter of a sphere it is inscribed in, as $\sqrt{2}$ to the $\sqrt{3}$, consequently they are incommensurable.

TETRAGON, in geometry, a general name for any four-sided figure, as a square, parallelogram, rhombus or trapezium.

TETRAGON, in astrology, an aspect of two planets with regard to the earth, more usually called quartile.

TETRAGONIAS, a name given to a meteor, whose head is of a quadrangular figure, and its tail or train long, thick, and uniform.

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TETRAGONISM, in geometry, a term used by some for the quadrature of a circle.

TETRAGONUS, in anatomy, a muscle otherwise called quadratus gener.

TETRANDRIA, in the Linnaean system of botany, a class of plants, the fourth in order; comprehending all such plants as have hermaphrodite flowers, with four stamina, or male parts in each.

TETRAPETALOUS, in botany, an epithet given to flowers that consist of four single petals or leaves, placed around the pistil.

TETRAPTERA, in the history of insects, a name given to that order of insects which have four wings. The insects of this order are very numerous, and have certain evident distinctions in the structure of their wings, and are thence arranged under five classes, viz. the coleoptera, sceleroptera, neuroptera, lipidoptera, and hynenoptera.

TETRAPTOIE, in grammar, a name given to such defective nouns as have only four cases; such are *vifci*, *pecudis*, *fordis*, &c. as being deprived of the nominative and vocative singular.

TETRASTICH, a stanza, epigram, or poem, consisting of four verses.

TETRASTYLE, in the ancient architecture, a building, and particularly a temple, with four columns in its front.

TEIRASYLLABICAL, a word consisting of four syllables.

TETRATONON, in music, a name whereby the superfluous fifth is sometimes called, as containing four tones.

TEUCRIUM, in botany, a genus of plants, the corolla of which is ringent, and formed of a single petal: the tube is cylindric and short, and terminates in an incurved opening: the lower lip is divided into three segments; the lateral ones are of the figure of the upper lip, and somewhat erect; the middle one is much larger and roundish: there is no pericarpium; the seeds are four, roundish, and lodged in the base of the cup. This genus comprehends the germander, posium, scordium, &c. This plant has the credit of being a great sudorific and alexipharmic. It is prescribed in malignant and pestilential fevers, and in the plague itself, as also in obstructions of the liver and spleen; it is said to destroy worms externally; it cleanses ulcers, and is applied by way of cataplasm to mitigate pain; it is at present chiefly used in the shops as an ingredient in the confectio Fracastorii.

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TEUTONIC, something belonging to the Teutons, an ancient people of Germany, inhabiting chiefly along the coasts of the German ocean; thus, the Teutonic language is the ancient language of Germany, which is ranked among the mother tongues. The Teutonic is now called the German or Dutch, and is distinguished into Upper and Lower. The upper has two notable dialects, viz. 1. The Scandian, Danish, or perhaps Gothic; to which belong the languages spoken in Denmark, Norway, Sweden, and Iceland. 2. The Saxon, to which belong the several languages of the English, Scots, Frisian, and those on the north of the Elbe. To the lower, the Low Dutch, Flemish, &c. spoken through the Netherlands, &c.

TEUTONIC ORDER, a military order of knights, established towards the close of the twelfth century, and thus called as consisting chiefly of Germans or Teutons.

This order is now little more than the shadow of what it formerly was, having only three or four commanderies, scarce sufficient for the ordinary subsistence of the grand master and his knights.

TEXT, a relative term, contradistinguished to gloss or commentary, and signifying an original discourse exclusive of any note or interpretation. This word is particularly used for a certain passage of scripture, chosen by a preacher to be the subject of his sermon. A text-book, in several universities, is a classic author written very wide by the students, to give room for an interpretation dictated by the master or regent to be inserted in the interlines. The Spaniards give the name of text to a kind of little poem or set of verses placed at the head of a gloss, and making the subject thereof, each verse being explained one after another in the course of the gloss.

TEXTURE, *Textura*, properly denotes the arrangement and cohesion of several slender bodies or threads interwoven or entangled among each other, as in the webs of spiders, or in cloths, stuffs, &c. Texture is also used in speaking of any union or constituent particles of a concrete body, whether by weaving, hooking, knitting, tying, chaining, indenting, intruding, compressing, attracting, or any other way. In which sense we say, a close compact texture, a lax porous texture, a regular or irregular texture, &c. A great deal depends on the texture of the component parts of a bo-

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dy; hence most of its particular properties, its specific gravity, colour, &c.

THALAMI Nervorum Opticorum, in anatomy, two oblong prominences of the lateral ventricles of the brain, medullary without, but a little cineritious within, being thus called because the optic nerves rise out of them.

* **THALIA**, in pagan mythology, one of the nine muses, presided over comedy, and is represented crowned with a garland of ivy, with a mask in her hand, and buskins on her feet.

THANE, or **THAIN**, a name of an ancient dignity among the English and Scots, or Anglo-Saxons. Skene makes thane to be a dignity equal to the son of an earl. Camden will have it, that thanes were only dignified by the offices they bore. There were two kinds or orders of thanes, the king's thanes, and the ordinary thanes: the first were those who attended the king in his courts, and who held lands immediately of the king. The ordinary thanes, or the thani minores, were the lords of the manors, who had particular jurisdiction within their limits and over their own tenants; these changed their names for that of barons, and hence their courts are called courts-baron to this day.

THANE-LANDS, lands granted by charters of our ancient kings to their thanes, with all immunities, except the threefold necessity of expedition, repair of castles, and mending bridges.

THAPSLA, deadly carrot, in botany, a genus of plants, the general corolla of which is uniform: the single flowers consist each of five crooked lanceolated petals: the fruit is naked, oblong, surrounded longitudinally with a membrane, and separable into two parts; the seeds are two, large, oblong, and convex, pointed at each end, and having on each side a plane margin, large and undivided, which is emarginated at top and bottom.

THAWING, the resolution of ice into its former fluid state, by the warmth of the air, &c.

THEATRE, in antiquity, a public edifice for the exhibiting of scenic spectacles, or shews, to the people; comprehending not only the eminence on which the actors appeared, and the action passed, but also the whole area of the place, common to the actors and spectators. The Romans borrowed the form of their theatres from those of the Greeks, which were generally built in the shape of a semicircle,

micircle, encompassed with porticos, and furnished with seats of stone, disposed in semi-circles, rising gradually one above another. The principal parts of the ancient theatres were the *scena*, *proscenium*, *orchestra*, and *area*. Among the moderns, theatre more peculiarly denotes the stage, or place whereon the drama or play is exhibited; answering to the *proscenium* of the ancients. It is also used, in a more comprehensive sense, for the whole play-house. *

THEATRE is also used in architecture, chiefly among the Italians, for an assemblage of several buildings, which, by a happy disposition and elevation, represents an agreeable scene to the eye.

Anatomical THEATRE, in a school of medicine and surgery, is a hall, with several rows of seats, disposed in the circumference of an amphitheatre, having a table bearing on a pivot, in the middle, for the dissection of bodies.

* **THEBES**, anciently a celebrated city of Greece, in Achaia, and capital of Boeotia; but now the province it stands in is called Livadia, and the town Thiba. It is seated on an eminence about three miles in circumference, but all its ancient splendor is gone. There are two mosques, and several Greek churches, and the number of inhabitants are about three thousand. It is seated between two small streams, twenty-five miles north-west of Athens. Long. 24. 5. E. Lat. 38. 22. N.

THEFT, in law, an unlawful felonious taking away another man's moveables and personal goods, against the owner's will, with intent to steal them. It is divided into theft or larceny, properly so called, and petit theft, or petit larceny; the former of which is of goods above the value of twelve pence, and is deemed felony; the other, which is of goods under that value, is not felony.

THEFTBOTE, the receiving a man's goods again from a thief, or other amends, by way of composition, and to prevent prosecutions, that the felon may escape unpunished; the punishment of which is imprisonment, but not the loss of life or members.

THEME, in matters of education, denotes the subject of an exercise, for young students to write or compose on.

THEME, among astrologers, denotes the figure representing the state of the heavens for any time required; that is, the places of the stars and planets for that time.

THENAR, in anatomy, the abductor muscle of the thumb: it has its origin in the transverse ligament that joins the bones of the carpus, and its termination in the first and second phalanx: the two sesamoid bones of the thumb are usually found lodged in the tendon of this muscle. The abductor muscle of the great toe, likewise called thenar, has its origin from the internal side of the calcaneum, and the os naviculare; and its termination at the internal side of the great toe, beside the internal sesamoid bone.

THEOBROMA, in botany, a genus of plants; the empalement of the flower is composed of three oval concave leaves, which are reflexed. The flower has five oval petals, which spread open, and are hollowed like a spoon; from the top of each petal comes out a bifid bristly ligula, divided like two horns. It has a great number of short stamina joined in five bodies, which are terminated by roundish summits, and a roundish germen supporting a single style the length of the petals, crowned by a single stigma. The germen afterward turns to a roundish fruit with five angles, opening in five cells, each containing several seeds.

THEOCRACY, in matters of government, a state governed by the immediate direction of God alone; such was the ancient government of the Jews, before the time of Saul.

THEODOLITE, a mathematical instrument much used in surveying, for the taking of angles, distances, &c. It is made variously, several persons having their several ways of contriving it, each more simple and portable, more accurate and expeditious than others.

Mr. Sisson's improved theodolite being one of the best of these instruments, we shall here give its description. The three staves whereby it is supported scrow into bell-metal joints by brass ferrills at top, which are moveable between brass pillars fixed in a strong brass plate; in which, round the center, is fixed a socket with a ball moveable in it, and upon which the four screws press that set the limb horizontal. Next above is such another plate, through which the said screws pass, and on which round the centre is fixed a frustum of a cone of bell-metal, whose axis, being connected with the center of the ball, is always perpendicular to the limb, by means of a conical brass ferrill fitted to it, whereon is fixed the compass-box, and on it the limb, which is a strong

strong bell-metal ring, whereon are moveable three brass indexes, in whose plate are fixed four brass pillars; that joining at top, hold the centre-pin of the bell-metal double sextant, whose double index is fixed in the center of the same plate. Within the double sextant is fixed the spirit-level, and over it the telescope. The compass-box is graved with two diamonds for north and south, and with 20 degrees on both sides of each, that the needle may be set to the variation, and its error also known.

The limb has two fleur-de-luces against the diamonds in the box, and is curiously divided into whole degrees, and numbered to the left hand at every 10° to twice 180°, having three indexes, with Nonius's divisions on each for the decimals of a degree, that are moved by a pinion fixed below one of them, without moving the limb, and in another is a screw and spring under, to fix it to any part of the limb: it has also divisions numbered for taking the quarter girt in round timber; to which a shorter index is used, having Nonius's divisions for the decimals of an inch; but an abatement must be made for the bark, if not taken off.

The double sextant is divided on one side from under its center, when the spirit tube and telescope are level, to above 60 degrees each way, and numbered at 10, 20, &c. And the double index, through which it is moveable, shews on the same side the degree and decimal of any altitude, or depression to that extent, by Nonius's divisions; on the other side are divisions numbered for taking the upright height of timber, &c. in feet, when distant ten feet, which at 20 must be doubled, and at 30 trebled; and also the quantities for reducing hypotenusal lines to horizontal: it is moveable by a pinion fixed in the double index.

The telescope is a little shorter than the diameter of the limb, that a fall may not hurt it; yet it will magnify as much, and shew a distinct object as perfect, as most of treble its length: in its focus are very fine cross wires, whose intersection is in the plane of the double sextant, and this is a whole circle, and turned in a lathe to a true plane, and is fixed at right angles to the limb; so that whenever the limb is set horizontal, which is readily done by making the spirit tube level over two screws, and the like over the other two; the double sextant and telescope are moveable in a vertical plane, and then every angle taken on the limb, tho' the telescope be never so much elevated

or depressed, will be an angle in the plane of the horizon; and this is absolutely necessary in plotting an horizontal plane.

The use of the theodolite is abundantly shewn in that of the graphometer, or semi-circle, which is only half a theodolite; and in that of the plane table, which is occasionally made to be used as a theodolite. Note, the index and compass of a theodolite, likewise serve for a circumferenter, and are used as such.

THEOGONY, that branch of the heathen theology, which taught the genealogy of their gods.

THEOLOGUM, in the ancient theatre, a kind of little stage above that whereon the ordinary actors appeared, being the place where the machinery of the gods were disposed; whence the name.

THEOLOGY, or DIVINITY, a science, which instructs us in the knowledge of God, or divine things; or which has God, and the things he has revealed for its object. Hence theology may be distinguished into natural, which comprehends the knowledge we have of God from his works, by the light of reason alone; and supernatural, which contains what we are taught concerning God in revelation. Theology is again distinguished into positive, moral, and scholastic. Positive knowledge is the knowledge of the holy scriptures, and of the signification thereof, conformably to the opinions of the fathers and councils, without the assistance of any argumentation. Some will have it, that this ought to be called expositive rather than positive. Moral theology is that which teaches us the divine laws relating to our manners and actions. Scholastic, or school theology, is that which proceeds by reasoning; or that derives the knowledge of several divine things from certain established principles of faith.

THEOREM, a speculative proposition demonstrating the properties of any subject. Theorems are either universal, which extend to any quantity, without restriction universally; as this, that the rectangle of the sum and difference of any two quantities, is equal to the difference of their squares: or particular, which extend only to a particular quantity; as this, in an equilateral right-lined triangle, each of the angles is 60 degrees. Theorems are again distinguished into negative, local, plane, and solid. A negative theorem is that which expresses the impossibility of any assertion; as that the sum of two biquadrate numbers can-

not make a square number. A local theorem is that which relates to a surface; as, that the triangles of the same base and altitude are equal. A plane theorem is that which either relates to a rectilinear surface, or to one terminated by the circumference of a circle; as that all angles in the same segment of a circle are equal. And a solid theorem is that which considers a space terminated by a solid line; that is by any of the three conic sections, e. gr. this: that if a right line cut two asymptotic parabolas, its two parts terminated by them shall be equal.

Reciprocal THEOREM, is one whose converse is true; as that, if a triangle have two equal sides, it must have two equal angles; the converse of which is likewise true, that, if it have two equal angles, it must have two equal sides.

THEORETIC, or *THEORETICAL*, something relating to theory, or that terminates in speculation. Hence theoretical astronomy is that part of astronomy, which accounts for the various phenomena of the stars and planets.

THEORY, in general, denotes any doctrine which terminates in speculation alone, without considering the practical uses and application thereof. Thus the theory of chemistry, for instance, contains all the general truths which the particular experiments of chemists have hitherto demonstrated. These are, on this occasion, to be taken for granted, and the whole body of such truths makes the universal theory of chemistry, for chemistry is no science formed *à priori*; it is no production of the human mind, or raised by reasoning, but collected *à posteriori* from experiments: it took its rise from various operations casually made, and observing those that had one and the same uniform tendency, without any expectation of what followed; and was only reduced into an art by collecting and comparing the effects of such uncertain experiments, and noting the tendency thereof: so far then as a number of experiments agree to establish any unquestionable truth, so far they may be considered as constituting the theory of chemistry. Such a theory is necessary to be premised to every art; and something equivalent to this is practised by every artisan, in teaching his disciple how to proceed orderly in the exercise of his art; and accordingly it would be impossible to teach the practice of chemistry to advantage, without having first given some such

theory. Thus it would be to little purpose to give a novice a parcel of rosemary, for instance, and bid him, without any addition, distil a water from it, which should contain the natural taste and odour of the plant: unless he knew beforehand this general truth, that plants, exposed to a gentle heat, like that of the summer's sun do exhale their most subtle and volatile parts, which being collected and condensed by means of proper vessels, appear in form of water, and are the thing required.

THERAPUTICE, *THERAPUTICS*, that part of medicine which acquaints us with the rules that are to be observed, and the medicines to be employed in the cure of diseases.

THERAPHIM, or *TERAPHIM*, certain images, or superstitious figures mentioned in scripture. We meet with this word thirteen or fourteen times in scripture, where it is commonly interpreted idols: but the rabbins are not contented to have it simply signify idols; but will have it denote a peculiar sort of idols or images for the knowledge of futurity, i. e. oracles.

THERIACA, *ANBROMACHI*, a compound medicine made in the form of an electuary, the ingredients of which, according to the college of London physicians, are as follows: Take of the troches of squills half a pound; long pepper, opium strained, dried vipers, of each three ounces; cinnamon, balsam of gilead, or in its stead expressed oil of nutmeg, of each two ounces; agaric, the root of Florentine onion, water germander, red roses, seeds of navy, extract of liquorice, of each an ounce and a half; spike-nard, saffron, amomum, myrrh, costus, or in its place zedoary, camels hay, of each an ounce; the root of cinquefoil, rhubarb, ginger, Indian leaf, or in its room mace, leaves of dittany of Crete, of hore-hound, and of calamint, French lavender, black pepper, seeds of Macedonian parsley, oilibanum, Chio turpentine, root of wild valerian, of each six drams; gentian root, Celtic nard, spignel, leaves of poley mountain, of St. John's wort, of ground pine, tops of creeping germander, with the seed, the fruit of the balsam tree, or in its stead cubebs, aniseed, the lesser cardamom seeds husked, seeds of bishop's weed, of hart wort, of treacle mustard, or mithridate mustard, juice of the rase of cistus accacia, or in its stead Japan earth, gum arabic, storax strained, sagapenum strain-

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ed, Lemnian earth, or in its stead bole armenic or French bole, green vitriol calcined; of each half an ounce; root of creeping birthwort, or in its stead of the long birth-wort, tops of the lesser centuary, seeds of the carrot of Crete, opopanax, galbanum strained, Russia castor, Jew's pitch, or in its stead, white amber prepared, root of the sweet flag, of each two drams; of clarified honey, thrice the weight of all the rest. The ingredients are to be mixed in the same manner as in the mithridate.

The college of Edinburgh have given the following reformation of this composition, under the title of *Theriaca Edinensis*.

Take of Virginian snake root, six ounces; wild valerian root, contrayerva root, each four ounces; aromatic powder three ounces; resin of guaiacum, Russia castor, myrrh, each two ounces; English saffron, opium, each one ounce; clarified honey, thrice the weight of the powders; canary wine, as much as is sufficient to dissolve the opium. This composition consists of very powerful ingredients, and is doubtless capable of answering every thing that can be reasonably expected from the more voluminous theriaca of Andromachus.

The theriaca Andromiehi is a reform of mithridate, made by Andromachus, physician to Nero; for the virtues wherof, see the article *Mithridate*.

THERMÆ, artificial hot baths much used by the Romans.

THERMOMETER, an instrument for measuring the increase and decrease of the heat and cold of the air, by means of the elastic and expansive power of bodies of the fluid sort.

THERMOSCOPE, an instrument shewing the changes happening in the air with respect to heat and cold. The word thermoscope is generally used indifferently with that of thermometer, though there is some difference in the literal import of the two; the first signifying an instrument that shews, or exhibits, the changes of heat, &c. to the eye, and the latter an instrument that measures those changes; on which foundation the thermometer should be a more accurate thermoscope, &c. This difference the excellent Wolsius taking hold of, describes all the thermometers in use as thermoscopes; shewing that none of them properly measures the heat, &c. none of them do more than indicate the same. Tho' their different heights, yesterday, and to-day, shew a difference of heat, yet, since they do not discover the ratio of yesterday's

heat to to-day's, they are not strictly thermometers.

THESEA, in antiquity, feasts celebrated by the Athenians, in honour of Theseus.

THESIS, a general proposition which a person advances and offers to maintain. In colleges it is frequent to have placards, containing a number of them, in theology, in medicine, in philosophy, in law, &c.

* **THETIS**, in pagan mythology, the wife of Oceanus, and the mother of Nerius and Doris. They were married to each other, and from this marriage sprung the nymphs of the earth and sea. Among the sea-nymphs there was one, named Thetis the Younger, excelling all the rest in beauty, and for whom Jupiter conceived such a passion, that he resolved to espouse her: but being informed by the Destinies that she would bring forth a son who would rise above his father, he married her to Peleus. To their nuptials all the gods and goddesses were invited, except Discord, who, to be revenged for this contempt, threw a golden apple into the assembly, on which was engraven, "This for the fairest." Juno, Pallas, and Venus, disputed for this apple; but Paris, who was chosen to decide the difference, adjudged it to Venus. From the marriage of Thetis and Peleus sprung Achilles.

THIGH, in anatomy, that part of the body of men, quadrupeds, and birds, between the leg and the trunk. The several parts of the thigh have different names: the fore and upper part is joined to the groin, or inguen; the side makes the haunch, or hip, coxa, coxendix; the upper hind part, the buttock, clunis: the lower and hind part of the ham, poples, of *post* and *plio*, because it bends backwards; and the fore-part of the knee, genu, of the Greeks *γῶν*, which signifies the same. The bone of the thigh is the largest and strongest of the whole human body, as being to bear the whole burthen thereof; whence its name femur, of *fere*, to bear.

THIMBLE, an instrument made of brass, silver, iron, &c. put on the finger to thrust a needle through any cloth, silk, &c. used by all seamstresses, tailors, &c. The art of thimble-making was brought from Holland, by Mr. John Lofting, a Dutchman, in 1695, who set up a workshop at Illington, and practised it with success. Thimbles are made of brass, or old hammered brass, the best being too dear, and the ordinary too brittle. This

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they melt and cast in a sort of sand, with which and red okre are made mould and cores, and in them they usually cast six grofs at a cast, and about six or seven of these casts in a day. They are cast in double rows, and, when cold, taken out and cut off with greasy shears. Then boys take out the cores from the inside with a pointed piece of iron, which cores were made by them, every core having a nail with a broad head in it, which head keeps it from the mould, and makes the hollow to cast it in. This done, they are put into a barrel as they do shot, and turned round with a horse, till they rub the sand one from another. Thus far the foundery, in which are employed six persons: first, the founder and two men make the moulds ready. Secondly, two boys make cores, for each thimble one. Thirdly, one that blows the bellows. From hence they are carried to the mill to be turned. First, the inside, which works with an instrument to the bottom, while its hold lasts, and flies back, when let loose. Secondly, the outside, which with a coarser engine called a rough turning, is made pretty smooth at one stroke; and afterwards with a finer engine both the side and bottom are at one stroke made very smooth. Then some saw-dust or filings of horn combs are put half way into each thimble, and upon it an iron punch, and then, with one blow against a studded steed, the hollow of the bottom is made. After this, with an engine, the sides have the hollow made, and in this engine is their chief secret, and they can work off with it thirty or forty grofs in a day. This done, they are again polished on the inside. Then the rim, whether a single or double one, are turned at one stroke, and all these turnings are performed with five men and three boys. After this, they are again turned in the barrel with saw-dust or bran, to scour them very bright, and so they are complete thimbles. Thus finished, they are sorted, and put six together one in another; and six of these half dozens are wrapped up in a blue paper; and four of these papers, making a grofs, are wrapped up in another paper, and tied with a packthread, which makes them almost a square, and are sold by the first maker at four or five shillings the grofs.

THINKING, a general name for any act or open action of the mind. When the mind turns to view inwards upon itself, the first idea that offers, says Mr. Locke, is thinking, wherein it observes a

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great variety of modifications, and thereof frames to itself distinct ideas. Thus, the perception annexed to an impression on the body made by an external object, is called sensation. When an idea recurs, without the presence of the object, it is called remembrance. When sought after by the mind, and brought again to view, it is called recollection. When held long there under attentive consideration, it is contemplation. When ideas float in the mind with regard or reflection, it is called a reverie; when they are taken express notice of, and as it were registered in the memory, it is called attention; and when the mind fixes its view on any one idea, and considers it on all sides, it is study and intention. These are the most obvious modes of thinking; but there are several others yet, and, doubtless, the mind is capable of infinite others, which we have no notion at all of. The Cartesians hold that it is impossible to conceive a mind which does not think, thought alone being the essence of the mind; and that there is no time when the soul does not think: but this doctrine is overturned by Mr. Locke, who shews, that in sleep, without dreaming, there is an intire recession of all the modes of thinking.

The school philosophers usually divide thinking, with regard to the object it is employed about, into understanding and willing, which are therefore said to be two powers or faculties of the human mind. Intellectual thinking is further subdivided into divers kinds. Thus, when the mind merely apprehends or takes notice of a thing, it is called perception. When it affirms or denies a thing, judgment: when it gathers or infers a thing from others given, reasoning; and when it disposes its own thoughts or ideas in order, method. Willing or volitive knowledge admits of infinite different modifications or determinations. Some authors extend the idea of thinking further; and consider it as existing in God, angels, men, and brutes; and divide it into divine, angelical, human, and animal or sensitive. The two first we know little or nothing of; the third is what we have already been treating of; and, as to animal or sensitive thought, it is defined to be an action of the soul attending to an external object, effected by means of the animal spirits duly agitated in the brain to excite an idea.

THIRD, in music, a concord resulting from a mixture of two sounds, containing an interval of two degrees.

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THIRD Point, or TIERCE POINT, in architecture, the point of section in the vertex of an equilateral triangle. Arches or vaults of the third point, called by the Italians *di terzo acuto*, are those consisting of two arches of a circle meeting in an angle a-top.

THIRST, a painful sensation, occasioned by a preternatural vellication of the nerves of the throat or fauces, and producing a desire of drinking.

Rohault accounts for thirst thus; the stomach liquor, which ordinarily resolves into a thick vapour, and ascends from the stomach up into the throat to moisten it, being too much warmed and agitated, either from a want of some other liquor to temper and dilute it, or from any other cause, becoming converted into too thin, subtile, and penetrating vapour, is so far from moistening and cooling the throat, that on the contrary it dries and heats it, and hence that motion in the nerves, the sensation of which we call thirst: thirst sometimes also arises from a mere dryness of the part; and sometimes from sharp salts more immediately vellicating the fibres of the throat.

There are various kinds of liquor which quench thirst, some by tempering the stomach liquor; others by diluting and even dissolving the salt; and others by moistening and supplying the fibres. — Acids are peculiarly fitted for that end.

Thirst is sometimes eluded by rolling a leaden bullet or pebble in the mouth, which occasions an extraordinary issue of saliva to moisten the throat, &c.

THIS FLE, Carduus, in botany. See *Carduus*.

THISTLE Fly, in natural history, a small fly produced from a fly-worm, hatching in the protuberances of the *carduus hemorrhoidalis*.

Order of the THISTLE, or of St ANDREW, a military order of knighthood in Scotland, the rise and institution of which is variously related by different authors: Lesley, bishop of Ross, reports, that the night before the battle between Athelstan king of Northumberland, and Hengus king of the Picts, a bright cross, in form of that whereon St. Andrew, the tutelar saint of Scotland, suffered martyrdom, appeared to Hengus, who having gained the victory, ever after bore the figure of the cross on his banners. Others assert, that Achaius king of Scotland, first instituted this order, after having made the famous league offensive and defensive

with Charlemagne king of France. Though the thistle had been acknowledged as the symbol of the kingdom of Scotland from the reign of Achaius, yet some refer the beginning of this order to the reign of Charles VII. of France. Others place the foundation of it as low as the year 1500. The chief and principal ensign is a gold collar composed of thistles and springs of rue interlinked with amulets of gold, having pendent thereunto the image of St. Andrew with his cross, and the motto *Nemo Me Impune Læssit*; "Nobody shall provoke me unpunished."

The ordinary or common ensign worn by the knights, is a star of four silver points, and over them a green circle bordered and lettered with gold, containing the said motto, and in the center is a thistle proper; all which is embroidered on their left breast, and worn with the collar, with a green ribband over the left shoulder, and brought under the right arm; pendent thereto is the image of St. Andrew, with his cross, in a purple robe, with an oval of gold enamelled vert, with the former motto: but sometimes they wear, enriched in the same manner, a thistle crowned.

About the time of the Reformation, this order was dropped, till James II. of England resumed it, by creating eight knights: however, the revolution unsettled it again, and it laid neglected till queen Anne, in 1703, restored it to the primitive design, of twelve knights of St. Andrew. King George I. in the first of his reign, confirmed the statutes signed by queen Anne, with the addition of several more, among which was that of adding rays of glory to surround the figure of St. Andrew, which hangs at the collar: and though from the Reformation to George I. both elections and installments had been dispensed with, his majesty ordered that chapters of election should, for the future, be held in the royal presence; to which end he ordered the great wardrobe to provide the knights brethren, and officers, with such mantles as the statutes of the said order appointed.

THLASPI arvense, vaccaria incana folio majus, Mithridate mustard, with hoary sharp-pointed leaves shaped like an arrow-head; and only one seed in each cell. It is biennial, and grows in fields and open clayey grounds.

THILIPSIS, a compression of the stomach from food, which is offensive only by its quantity; and not endued with any remarkable

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re remarkable quality; or from a conflux of
 unknowns, void of acrimony into the part.

* THOMAS (St.) the Apostle, sur-
 named Didymus. Not being with the
 disciples when Christ appeared to them
 after his resurrection, he would not believe
 that he was really risen from the dead;
 but eight days after Christ making him
 feel the place where the wounds had been
 made in his side and his hands, he was
 thoroughly convinced of that important
 truth. St. Thomas preached the Gospel
 to the Ethiopians, Parthians, Medes, &c.

ST. THOMAS'S DAY, a festival of the
 Christian church, observed on December
 21, in commemoration of St. Thomas the
 apostle.

* THOMSON, (JAMES) a celebrated
 poet, was the son of a minister in Scotland,
 and was born at Ednam, in the shire of
 Roxburgh, the 11th of September, 1700.
 He studied at the university of Edinburgh,
 where Mr. Hamilton, who filled the
 divinity chair, prescribed to him for the
 subject of an exercise, a Psalm, in which
 are celebrated the power and majesty of
 God. Of this Psalm he gave a paraphrase
 and illustration, as the nature of the exer-
 cise required; but in a style so highly
 poetical, that it surprised the whole au-
 dience. Having soon after received some
 encouragement from a lady of quality, a
 friend of his mother, then in London, he
 set out on his journey thither. Though
 this encouragement ended in nothing be-
 neficial, his merit did not lie long con-
 cealed. The kind reception he met with
 here emboldened him, in 1726, to risk
 the publication of his *Winter*, and from
 that time his acquaintance was courted by
 all men of taste. Dr. Rundle, afterwards
 bishop of Derry, received him into his
 intimate confidence, and introduced him
 to his great friend the lord-chancellor
 Talbot. In return Mr. Thomson's chief
 care was to finish the plan which their
 wishes had laid out for him, and the ex-
 pectations which the winter had raised,
 were fully satisfied by the successive pub-
 lication of the three other seasons. Be-
 sides these, he published about the same
 time his *Poem to the Memory of Sir
 Isaac Newton*, then lately deceased, his
Britannia, a poem, and his tragedy of
Sophonisba, which was acted with ap-
 plause in 1729. His poetical pursuits
 were now to be interrupted by his atten-
 dance on the honourable Mr. Charles
 Talbot, the son of the lord-chancellor,
 in his travels; with him he visited most
 of the courts of Europe, and what judi-

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cious observations he made on this occasion
 appears from his excellent Poem on Li-
 berty, which he began soon after his
 return to England. But while he was
 writing the first part of this poem, he re-
 ceived a severe shock by the death of his
 noble friend and fellow-traveller, which
 was soon followed by another severer still,
 the death of lord Talbot himself, whom
 Mr. Thomson laments in the most pathetic
 manner, in the poem dedicated to his
 memory. His lordship had a little before
 made him secretary of the briefs; but
 this place falling with his patron, he found
 himself reduced to a state of precarious
 dependence, in which he passed the great-
 est part of the remainder of his life. It
 will not here be improper to mention an
 incident, worthy of notice. Mr. Thom-
 son having the misfortune to be arrested
 by one of his creditors, the report of his
 distress reached the ears of Mr. Quin, the
 celebrated comedian, who being told that
 he was in the hands of a bailiff, at a
 spunging-house, in Holborn, went thither,
 and being admitted into the room, was,
 after some civilities on both sides, invited
 by Mr. Thomson to sit down. Quin
 then told him, that he was come to sup
 with him, and had already ordered sup-
 per to be provided, which he hoped he
 would excuse. Mr. Thomson made the
 proper reply, and the discourse turned on
 subjects of literature. When supper was
 over, and the glass had gone briskly round,
 Quin observed that it was time to enter
 upon business. On which Mr. Thomson,
 imagining he was come about some affairs
 relating to the drama, declared that he
 was ready to serve him to the utmost of
 his capacity, in any thing he should com-
 mand. "Sir," said Quin, "you mis-
 take my meaning; I am in your debt, I
 owe you a hundred pounds; and I am
 come to pay you." Thomson replied,
 that as he was a gentleman whom he had
 never offended, he wondered he should
 come to insult him under his misfortunes.
 Quin, in return, expressed his detestation
 of such ungenerous behaviour, adding,
 "I say, I owe you a hundred pounds;
 and there it is," laying a bank note of that
 value before him. Thomson, filled with
 astonishment, begged he would explain
 himself. "Why," replied Quin, "I'll tell
 you. Soon after I had read your *Seasons*,
 I took it in my head, that, as I had some-
 thing to leave behind me when I died, I
 would make my will; and among the rest
 of my legatees, I set down the author of
 the *Seasons* a hundred pounds; but this
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day hearing that you was in this house, I thought I might as well have the pleasure of being my own executor." Mr. Thomson expressed his grateful acknowledgments. The sum being much more than the debt for which he was confined, he was immediately discharged, and a very strict friendship subsisted from that time between him and his generous benefactor.

The profits Mr. Thomson received from his works were not inconsiderable: his tragedy of Agamemnon, acted in 1738, yielded a good sum. But his chief dependance was now on the protection and bounty of Frederic, prince of Wales, who, upon the recommendation of lord Lyttleton, settled on a handsome allowance; but the misunderstanding which subsisted between his royal highness and the court, prevented his obtaining a licence for his admirable tragedy of Edward and Eleanor. His next dramatic performance was the mask of Alfred, written jointly with Mr. Mallet. In 1745, his *Tancred and Sigismunda* was performed with applause; and in the mean time, he had been finishing his *Castle of Indolence*, an allegorical poem, in two cantos, which was the last piece Mr. Thomson published. Soon after, the generous friendship of lord Lyttleton procured for him the place of surveyor-general of the Leeward islands, which he enjoyed the two last years of his life. Mr. Thomson had improved his taste upon the finest originals, ancient and modern. The autumn was his favourite season for poetical composition, and the deep silence of the night he commonly chose for his studies.

As for the distinguishing qualities of his mind and heart, they best appear in his writings. There his devotion to the Supreme Being, his love of mankind, his country, and friends, shine out in every page; his tenderness of heart was so unbounded, that it took in even the brute creation. It is not known, that through his whole life, he ever gave any person a moment's pain, either by his writings or otherwise. These amiable virtues did not fail of their due reward; the applause of the public attended all his productions: his friends loved him with an enthusiastic ardour, and sincerely lamented his untimely death, which happened the 27th of August, 1748, and his remains were deposited in Richmond church. His executors were the lord Lyttleton and Mr. Mitchel, by whose interest *Coriolanus*, which he had just finished, was brought

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upon the stage to the best advantage. In 1762, were published two editions of his works, one in two volumes quarto, and the other in four volumes duodecimo. With the profits arising from the former, which was printed by subscription, is erected a monument to his memory, in Westminster abbey. Under it are these lines:

Tutor'd by thee, sweet Poetry exalts
Her voice thro' ages, and informs the page
With music, image, sentiment, and thought
Never to die

Obiit Aetatis 48, A. D. 1748.

This monument was erected in
MDCCLXII.

THORACIC, a name given to two branches of the axillary artery, on account of their conveying the blood into some parts of the thorax. The thoracic arteries are distinguished into upper and lower. There are likewise thoracic veins, upper and under, destined for the conveyance of the blood from the thorax to the axillary vein.

THORACIC DUCT, or **CHYLIFEROUS DUCT**, a very slender canal, receiving the chyle from the chyloferous vessels, and the lymph from the lymphatics, and carrying them to the thorax, and usually through it to the subclavian vein. The use of the thoracic duct is to carry the chyle to the blood, through the thorax, as it receives it from the receptacle, and with it the lymph from the lymphatics.

THORAX, in anatomy, that part of the human body which forms the capacity of the breast, and wherein are included the heart and lungs. All that lies between the basis of the neck and the diaphragm, or midriff, that is, down to the last ribs, is called the thorax or chest. The fore-part of the thorax is called the breast; in it are the clavicular or channell-bones, and the sternum or breast-bone, which is in the middle; it begins at the clavicular, and terminates in the cartilago xiphoides or sword-like cartilage. Under the sternum lies the mediastinum, and the heart in its pericardium. The mammae or breasts are two round tumours, which appear upon the fore-part of the chest, under which are situated part of the ribs, the pleura, and the lungs: there stands upon their center a little protuberance called papilla or nipple, which is encompassed by a reddish circle called areola. The hollow in the middle of the breast,

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breast, below the breasts, is called *scrobiculus cordis*. The hinder part of the thorax is called the back, composed of twelve vertebrae or joints, and two scapulae or shoulder-blades, which are the two upper parts of the back on the sides of the vertebrae. The lateral parts of the thorax are called *peristerna*. The uses of the parts of the thorax in general, are their serving to respiration and the circulation of the blood, in both sexes; and in women, to the producing milk.

THORNBACK, in ichthyology, the prickly rail, with tuberculose teeth, and a transverse cartilage in the belly. The head and body are very flat and depressed; the figure of the body, exclusive of the tail, is nearly square; the tail is long and slender, but a little depressed or flattened; the belly is altogether pland, but rises a little in the middle into a convexity; the eyes stand on the uppermost part of the body, at a considerable distance from the rostrum, and are a little protuberant, and covered with a simple and naked skin; behind each eye there is a single oblong foramen, that runs transversely, and its anterior side is flattened, and serves as a valve to close up almost the whole aperture; the mouth is situated on the under side of the body, and lies in a transverse direction, is very large, and stands at the same distance from the extremity of the rostrum as the eyes do.

THOUGHT, or **SENTIMENT**, a general name for all the ideas consequent on the operations of the mind, and even for the operations themselves. See *Idea* and *Thinking*.

THOUGHTS, in a boat, a name given by seamen to the benches on which the men sit down to row.

THRASHING, or **THREHING**, in agriculture, the art of beating the corn out of the ears. There are two ways of separating corn from the ear; the first by beating it with a flail, which is properly what is called thrashing. The other method, still practised in several countries, is to make mules, or horses, trample on it, backwards and forwards; this is properly what the ancients called *tritura* and *tritatio*. The Hebrews used oxen therein, and sometimes yoked four together for this purpose. Another way among the ancients was with a kind of sledge, made of boards joined together, and laden with stones or iron, upon which a man was mounted, and the whole drawn over the corn by horses: this instrument was called *traha*, or *tri-*

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bula. It is a rule among husbandmen, that the season for thrashing, is as soon as the corn has sweated in the heap, or mow.

THRAVE, or **THREAVE**, of corn, twenty-four sheaves, or four shocks of six sheaves to the shock; though, in some countries, they only reckon twelve shocks to the thrave.

THRUSTOMITCHES, in natural history, the name of a genus of compound earths, the bodies of which are loams composed of sand and a less viscid clay, and are therefore of a friable or crumbly texture.

The earths of this genus are generally used to make bricks.

THREAD, in botany, is understood of those threads usually found in the middle of flowers; as in the lily, tulip, rose, &c.—There are two kinds; those which support apices are particularly called *stamina*, and those which have none, simply threads.

The thread of the Laplanders is very fine, white, and strong, but it is of a very different nature from ours; they know nothing of flax or hemp, nor of any other plant whose stalks might supply the place of these in making thread, but theirs is made of the sinews of the rein-deer. They kill of these animals a very great number, continually, partly for food, partly for the skins, which they use in cloathing themselves, covering their huts, and on many other occasions; the sinews of all that they kill are carefully preserved, and delivered to the women, whose province it is to prepare this necessary matter. They beat the sinews very well, and after having steeped them a long time in water, they spin them out.

The thread they thus make is of any degree of fineness they please; but it never is any longer than the sinew from which it is made. They use this in sewing their cloaths, shoes, gloves, &c. and the trappings of their rein-deer. The threads of the same sinew are laid up together, and are all of a length; and as the different sinews afford them of very different lengths, they accordingly pick out such as the present use requires, both in regard to length and fineness. This sort of thread is made with much more labour than ours; but it is greatly superior to it on many occasions, where strength is rather required than beauty.

These people have, besides this, a way of making a sort of yarn of sheep's wool, which

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which they weave into garters, and a sort of ribbons, used by way of ornament; but they place no value on it, because of its want of strength.

THRICHECHUS, the sea-cow, in zoology, a genus of sea animals; it has teeth in both jaws; there is no fin upon the back, and the skin is very tough, firm, and hairy.

THRIPS, in the history of insects, a genus of the order of scleropstera, having the rostrum obscure, the body of a linear figure, and the wings four in number, being incumbent on the back, and straight. It is an extremely small insect, not equal to a flea in size.

THROAT, the anterior part of an animal between the head and the shoulders, wherein is the gullet. Physicians include, under the word throat, all the hollow or cavity which may be seen when the mouth is wide open. It is sometimes also called isthmus, by reason it is narrow, and bears some resemblance to those straits called by the geographers isthmi.

THRONE, a royal seat or chair of state, enriched with ornaments of architecture and sculpture, made of some precious matter, raised on one or more steps, and covered with a kind of canopy. Such are the thrones in the rooms of audience of kings, and other sovereigns.

THROWSTER, one who prepares raw silk for the weaver, by cleansing and twisting it.

THRUPTOMICTHES, in natural history, a genus of earths, consisting of moulds of a lax, friable texture.

THRUSH, in ornithology, two species of turdus, the one called the common thrush, and the other the missel thrush. The common thrush is the turdus with a white line over the eyes. This is smaller than the fieldfare; the head is small and flatted; the eyes are bright, their iris hazel; the ears patulous; the beak about half an inch long, brown and pointed; the head and back of an olive brown, spotted with a dark colour: the breast is yellow, the belly whitish, and the legs brown. The other species of turdus, called the missel-thrush, is of a greyish yellow colour with a spotted breast, being the largest of the turdus kind.

THUMB, in anatomy, one of the parts or extremities of the hand. See *Hand*.

The thumb, considered separately, has bones thicker than those of the

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fingers; the first of these agree in all respects with those of the metacarpus, in figure, situation, and articulation; but in its motion it is widely different. The articulation of the first with the second, and of the second with the third, are like the articulations and motions of the second and third phalanges of the other fingers.

THUNDER, a noise in the regions of the air, excited by a sudden kindling of sulphureous exhalations.

Those philosophers who maintain, that vapours are buoyed up in the air by particles of fire adhering to them, account for the phenomena of thunder and lightning in the following manner: they suppose that from the particles of sulphur, nitre, and other combustible matter, which are exhaled from the earth, and carried into the higher regions of the atmosphere, together with the ascending vapours, is formed an inflammable substance, which, when a sufficient quantity of fiery particles is separated from the vapours, by the collision of two clouds, or otherwise, takes fire, and shoots out into a train of light, greater or less, according to the strength and quantity of the materials. This opinion is certainly false; for it is impossible the vapours should be attended with such fiery particles as is here supposed: neither have we occasion to fly to such an hypothesis; for as vapours, exhaled from the surface of the water, are carried up into the atmosphere, in like manner the effluvia of solid bodies are continually ascending thither. Now we find by experiment, that there are several inflammable bodies, which, being mixed together in due proportion, will kindle into flame by fermentation alone, without the help of any fiery particles.

Thus, M. Lemery having covered up, in the earth, about fifty pounds of a mixture, composed of equal parts of sulphur and filings of iron, tempered with water; after eight or nine hours time, the earth, where it was laid, vomited up flames. Thus also, mix a small quantity of gun-powder with oil of cloves, pour gently upon this mixture two or three times as much spirit of nitre, and you will observe a bright inflammation suddenly arising from it. A mixture of the two fluids alone will take fire, the powder is added only to augment the inflammation. When, therefore, there happens to be a mixture of the effluvia of such bodies floating in the air, they ferment,

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ment, kindle, and, flashing like gunpowder, occasion those explosions and streams of fire, which we call thunder and lightning.

As to the particular species of the effluvia, which compose this mixture, that cannot be exactly determined: they are thought to be chiefly sulphureous and nitrous; sulphureous, because of the sulphurous smell which lightning generally leaves behind, and of that sultry heat in the air, which is commonly the fore-runner of it; nitrous, because we do not know of any body liable to so sudden and violent an explosion as nitre is.

Dr. Lister is of opinion, that the matter both of thunder and lightning, and also of earthquakes, is the effluvia of the pyrites; as he does, that the matter of vulcanos is the pyrites itself. This is a mineral that emits copious exhalations, and is exceeding apt to take fire upon the admission of moisture. See the doctor's defence of his notion in the *Phil. Trans.* N^o 157. He thinks this may be the reason why England is so little troubled with earthquakes, and Italy, and almost all places round the Mediterranean sea, so very much, viz. because the pyrites are rarely found in England; and, where they are, they lie very thin, in comparison of what they do in those countries; as the vast quantity of sulphur emitted from the burning mountains there, seems to shew.

The effects of thunder and lightning are owing to the sudden and violent agitation the air is put into thereby, together with the force of the explosion; and not to thunderbolts falling from the clouds, as is supposed by the vulgar.

Some are inclined to think, that thunderbolts are artificial, and that they were applied by the ancients to some use. What confirms them in their opinion is, that they are found more frequently where sepulchres have been, than in other places.

The distance the thunder is from us, may nearly be estimated by the interval of time between our seeing the lightning and hearing the thunder; for as the motion of light is so very quick, that the time it takes up in coming to us from the cloud is not perceptible; and as that of a sound is about a thousand feet in a second; allowing a thousand feet for every second that passes between our seeing the one and hearing the other, we have the distance of the cloud, pretty nearly, from whence the thunder comes.

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We sometimes see flashes of lightning, though the sky be clear and free from clouds; in this case they proceed from clouds that lie immediately below our horizon.

It has lately been found, by repeated experiments, that the electric matter, and that which produces thunder, are the same. We are beholden for this discovery to Mr. B. Franklin of Philadelphia.

THURSDAY, the fifth day of the Christian week, but the sixth of that of the Jews.

Holy THURSDAY, the same with Ascension-day.

THUYA, in botany, a genus of plants, producing male and female flowers in the same plant; the male flowers are produced in an oval catkin, placed opposite upon the common foot-stalk, each flower embracing it with its base: these come out of an oval concave scale; they have no petals, but have four stamina, which are scarce discernible; their summits adhere to the base of the scale of the empalement. The female flowers are collected in a common almost oval cone, two flowers standing opposite in each scale; they have no petals, but have a small germen, supporting a slender style, crowned with a single stigma; these are succeeded by an oblong oval cone, opening longitudinally, whose scales are almost equal, convex on the outside, and obtuse, each containing an oblong seed. Mr. Miller enumerates two species of these plants; the first growing naturally in Canada, Siberia, and other northern countries; and in some of the English gardens which have not been altered, there are some of these trees which are of a large size: it has a strong woody trunk, which rises to the height of forty feet or more. The second sort grows naturally in the northern parts of China, where it rises to a considerable height; but this has not been long enough in Europe to have any trees of large size.

THYMALLUS, in ichthyology, the name of a fish, called in English the greyling or umber.

THYMUS, thyme, in botany, a low shrubby plant, consisting of numerous slender tough stalks, with little roundish leaves in pairs, and loose spikes on the tops, of purplish or whitish labiated flowers, whose upper lip is nipt at the extremity, the lower divided into three nearly equal segments.

There are three different species of thyme

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thyme enumerated in the materia medica: 1. Common thyme, with upright stalks, and dark brownish green somewhat pointed leaves; a native of the southern parts of Europe, common in our gardens, and flowering in June and July.

This herb is a moderately warm pungent aromatic. To water it imparts, by infusion, its agreeable smell, but only a weak taste, with a yellowish or brown colour: in distillation, it gives over an essential oil, in quantity about an ounce from a thirty pounds of the herb in flower, of a gold yellow colour if distilled by a gentle fire, of a deep brownish red if by a strong one, of a penetrating smell resembling that of the thyme itself, but less grateful, in taste excessively hot and fiery: the remaining decoction, inspissated, leaves a bitterish, roughish, subsaline extract. The active matter, which by water is only partially dissolved, is by rectified spirit dissolved completely, though the tincture, in colour blackish green, discovers less of the smell of the thyme than the watery infusion: the spirit brings over in distillation a part of its flavour, leaving an extract of a weak smell and of a penetrating camphorated pungency.

2. Mother-of-thyme, with trailing stalks, and obtuse leaves, growing wild on heaths and dry pasture grounds. This also is an elegant aromatic plant, similar to the foregoing species, but milder, and in flavour rather more grateful. Its essential oil is both in smaller quantity and less acrid, and its spirituous extract comes greatly short of the penetrating warmth and pungency of that of the other. Both the leaves themselves, and their spirituous tincture, are of a bright green colour, without any thing of the brown or blackish hue of those of the common thyme.

3. Lemon-thyme, in appearance differing little from the second sort, except that it is more upright and more bushy; a native of dry mountainous places, common in gardens, and flowering as the others in June or July. This species is less pungent than the first sort, more so than the second, and much more grateful than either: its smell, in particular, is remarkably different, approaching to that of lemons. Distilled with water, it yields a larger quantity than the other sorts, of a yellowish very fragrant oil of the lemon flavour, containing nearly all the medicinal parts of the plant, for the remain-

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ing decoction is almost insipid as well as inodorous. It gives over also with rectified spirit its finer odorous matter; a less agreeable flavour, and a moderate warmth remaining in the spirituous extract.

All these plants may be easily propagated by those who are desirous to have them in their gardens, either by slips, or by sowing their seeds in the spring. They delight in dry undunged ground, where they will propagate themselves by their trailing stalks, and require no other care than keeping them clean from weeds.

THYMUS, in anatomy, is that gland which in calves, lambs, and young animals, is called the sweet-bread.

THYMUS, in medicine, is used for a kind of wart growing on the parts of generation, the fundament, and several other parts of the body.

The ordinary method of curing a thymus, is by ligature and desiccative lotions, or by caustics; and if large, by incision, taking care first to secure the greater vessels, by tying them.

THYNNUS, the name of a fish called in English the tunny, or Spanish mackerel, common in the Mediterranean, and other seas, and sometimes, though not frequently, caught on the English coasts.

THYROARYTENOIDES, in anatomy, a muscle of the larynx, which arising and terminating in it, serves, together with the arytenoides, to constrict it. These two muscles mutually intersect one another, and straighten the glottis: sometimes there is but one muscle, and sometimes it is different from that described here.

THYROIDE GLAND, in anatomy, is of a very singular figure, resembling that of the new moon. It adheres by its middle part, which is called by authors its isthmus, to the upper ring of the trachea, and its points or horns are turned upwards. It adheres on each part to the larynx and oesophagus.

THYROIDE CARTILAGE, one of the five cartilages that principally compose the larynx. The thyroide is the first of these cartilages, and is also called the scutiform cartilage, being of a quadrangular figure, and standing in the anterior part, where the pomum Adami, as it is usually called, makes its prominence, and the largest of the other five cartilages.

THYROSTAPHYLINUS, in anatomy, the name of a muscle of the uvula, which arising from the lateral part of the thyroide cartilage, and ascending to-

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wards the *uva*, becomes larger, and is inserted in the manner of an arch, in the side of the *velum palatinum*.

THYRSUS, in antiquity, the sceptre which the poets put into the hand of Bacchus, and wherewith they furnished the *Menades* in their *Bacchanalia*. The thyrsus was originally a lance or spear wrapped up in vine-leaves, wherewith Bacchus is said to have armed himself and his soldiers in the Indian wars, to amuse and deceive the unpractised Indians, and make them expect no hostilities. Hence, it was afterwards borne in the feasts and sacrifices of that god; and as the satyrs, who were Bacchus's soldiers, were supposed to have fought with it, it became a custom to represent them therewith.

TIARA, an ornament or habit wherewith the ancient Persians covered their head, and which the Armenians and kings of Pontus still wear on medals; these last, because descended from the Persians.

TIARA is also the name of the pope's triple crown, anciently called *regnum*.

* **TIBER**, a great river of Italy, which runs from north to south through the pope's territories, passing by Perugia and Orvieto, and having visited Rome, falls into the Tuscan sea at Ostia, fifteen miles below that city.

TIBIA, in anatomy, the inner and bigger bone of the leg, called also *os femur*: it is hard and firm, with a cavity in its middle; it is almost triangular; its fore and sharp edge is called the *shin*. In its upper extremity it has two large sinuses, tipped with a soft and subtle cartilage, called *cartilago lunata*, from its figure. It runs in between the extremities of the two bones, and becomes very thin at its edge, like those in the articulation of the lower jaw. It facilitates a small side motion of the knee. The sinuses receive the two protuberances of the thigh-bone, and the production which is between the sinuses of the tibia, is received in the sinus which divides these two protuberances of the femur. By bending our knee, we bring our leg, in walking, in a straight line forwards, which, without this articulation, we could not have done: but, like those who have the misfortune to have a wooden leg, we must have brought our foot about in a semi-circle, in going even upon a plane, but more evidently upon a descent. On the side of this upper end it has a small knob, which is received into a

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small sinus of the fibula; and, on its fore part, a little below the patella, it has another, into which the tendons of the extensors of the leg are inserted. Its lower extremity, which is much smaller than its upper, has a remarkable process which forms the inner angle, and a pretty large sinus divided in the middle of a small protuberance; the sinus receives the convex head of the same bone. It has another shallow sinus in the side of its lower end, which receives the fibula.

TIBIALIS, or **TIBIÆUS**, in anatomy, the name of two muscles of the foot, distinguished by the epithets *anticus* and *posticus*.

* **TIBULLUS**, **AULUS ALBIUS**, a Roman knight, and a celebrated Latin poet, was born at Rome in the 43d year before the Christian æra. He was the friend of Horace, Ovid, Macer, and other celebrated men in the reign of Augustus. He accompanied Messala Corvinus in his expedition against the island of Corcyra; but falling sick, and being unable to support the fatigues of war, he quitted the profession of arms, and returned to Rome, where he died before the year 17, when Ovid shewed his grief for his death by writing a very fine elegy upon him. Tibullus wrote four books of elegies, which are still extant, and are written in a tender and agreeable style, and in very elegant Latin.

TICKLING, says M. le Cat, is, in respect to the sense of feeling, what an hermaphrodite is in respect to sexes: it partakes equally almost of pleasure and pain; making one laugh, at the same time that it is intolerable; and if carried too far, frequently has had and even fatal effects. In this sensation, the organs of feeling are affected with a light tremulous motion, which occasions all voluptuous sensations, but more lively in its degree, and smarter than that which usually attends on pleasure: it proceeds from that gentle friction, which is distinguished from all other impressions on the organs, by the name of titillation.

TIDES, two periodical motions of the waters of the sea, called the *flux* and *reflux*, or the *flow* and *ebb*. The cause of the tides is the attraction of the sun and moon, but chiefly of the latter; the waters of the immense ocean, forgetful, as it were, of their natural quietus, move and roll in tides, obsequious to the strong attractive power of the moon, and weaker influence of the sun.

The greatest elevation of the waters is not

not when the luminary is in the meridian, but about three hours after, because the motion communicated to the waters during the arrival of the meridian is not immediately destroyed, but remains some time, and receives a farther augmentation from that which is impressed for about three hours after. For the same reason, we observe, the greatest and least tides happen not on the day of the syzygy, or quadrature, but on the third or fourth after; the sum or difference of the forces of the luminaries not being till then at a maximum.

That the tides may have their full motion, the ocean in which they are produced ought to be extended from east to west 90° , or a quarter of a great circle of the earth, at least; because the places where the moon raises most, and most depresses the water, are at that distance from one another. Hence it appears, that it is only in the great oceans that such tides can be produced; and why, in the large Pacific ocean, they exceed those in the Atlantic ocean: hence also it is obvious, why the tides are not so great in the torrid zone, between Africa and America, where the ocean is narrower, as in the temperate zones on either side; and from this also we may understand why the tides are so small in islands that are very far distant from the shores. It is manifest, that in the Atlantic ocean the water cannot rise on one shore but by descending on the other; so that, at the intermediate distant islands, it must continue at about a mean height betwixt its elevation on the one and on the other shore.

As the tides pass over shoals, and run through streights into bays of the sea, their motion becomes more various, and their height depends on a great many circumstances. The tide that is produced on the western coast of Europe corresponds to the theory above described: thus, it is high water on the coast of Spain, Portugal, and the west of Ireland, about the third hour after the moon has passed the meridian: from thence it flows into the adjacent channels, as it finds the easiest passage. One current from it, for example, runs up by the south of England, and another comes in by the north of Scotland: they take a considerable time to move all this way, and it is high water sooner in the places to which they first come; and it begins to fall at those places, while the two currents are yet going on to others that

are farther in their course. As they return, they are not able to raise a tide, because the water runs faster off than it returns, till, by a new tide propagated from the ocean, the return of the current is stopped, and the water begins to rise again. The tide takes twelve hours to come from the ocean to London bridge, so that when it is high water there, a new tide is already come to its height in the ocean; and, in some intermediate place, it must be low water at the same time. In channels, therefore, and narrow seas, the progress of the tides may be, in some respects, compared to the motion of the waves of the sea. When the tide runs over shoals, and flows upon flat shores, the water is raised to a greater height than in the open and deep oceans that have steep banks; because the force of its motion cannot be broke upon these level shores, till the water rises to a greater height.

If a place communicates with two oceans, or two different ways with the same ocean, one of which is a readier and easier passage, two tides may arrive at that place in different times, which, interfering with each other, may produce a great variety of phenomena. An extraordinary instance of this kind happened at Bathia, a port in the kingdom of Tonquin in the East Indies, of northern latitude $10^\circ 30'$. The day in which the moon passes the equator, the water stagnates there without any motion: as the moon removes from the equator, the water begins to rise and fall once a day; and it is high water at the setting of the moon, and low water at her rising. This daily tide increases for about seven or eight days, and then decreases for as many days by the same degrees, till this motion ceases, when the moon has returned to the equator. When she has passed the equator, and declines toward the south pole, the water rises and falls again, as before; but it is high water now at the rising, and low water at the setting of the moon.

The air, which is 860 times lighter than water, must yield in proportion more easily to the attracting force of the sun and moon; and therefore the tides will in this profound and vast aerial ocean be very considerable and important.

TIDE-WAITERS, or TIDEMEN, inferior officers belonging to the custom-house, whose employment it is to watch or attend upon ships, until the customs be paid: they get this name from their

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going on board ships, on their arrival in the mouth of the Thames or other port, and so come up with the tide.

TIERCE, or **TEIRCE**, a measure of liquid things, as wine, oil, &c. containing the third part of a pipe, or forty-two gallons.

TIERCED, in heraldry, denotes the shield to be divided by any of the partition-lines, as party, coupy, tranchy, or tailly, into three equal parts of different colours or metals.

TIGE, in architecture, a French term for the shaft or fust of a column, comprehended between the astragal and the capital.

TIGER, or **TYGER**, in zoology, makes a distinct genus of the quadruped class of animals: it has four paws placed near the navel, and its feet are adapted to climbing. Linnaeus takes in the panther to this genus, and distinguishes the tyger by the name of *tygris maculis oblongis*, and the panther by that of *tygris maculis orbiculatis*. The tyger has its name from its supposed swiftness, and has been described by almost all authors as one of the swiftest of all the wild carnivorous animals; but this has been wholly contradicted by such authors as have seen the creature, who all declare that it is a slow and sluggish animal, and is unable to overtake a man, or almost any animal that has an opportunity of running away from it. It will give two or three large leaps; but if it do not seize its prey in these, is but ill qualified to catch it afterwards. *Ray's Syn. Quad.*

It exceeds the lion in size, and is of an unconquerable fierceness. It agrees with the panther in the variegation of its colours, but differs in the disposition of them; for in the panther the colours are disposed in round spots or eyes, and in the tyger they are disposed in long streaks.

The tyger is found in the East Indies, in many parts of Asia, and in America; but there seems some difference in species between the Asiatic and American tygers; and possibly fuller observation may prove, that the Asiatic are swift as the ancients have described them, and the American ones of the slowness of which we have accounts.

The manner of carrying off the young brood of this animal is described by Pliny as follows: The Hircanians and Indians bring up the tyger, says he, an animal of a dreadful swiftness, which is most put to the proof, when going to be taken. The

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whole brood, which is always very numerous, is carried off upon a horse, as swift as possible, and often removed to a fresh one. When the mother tyger finds the nest empty, and the brood gone, for the males take no care of them, she traces the scent with furious speed; and when she is arrived within hearing of the person who is carrying off her young, he throws down one of them; this she takes up in her mouth, and, as if made more swift by the load, carries it back, and then returning, is treated in the same manner till the person gets on board a ship, and leaves her to vent her rage on the shore.

TIGER-SHELL, a beautiful species of voluta, of a dusky red colour, spotted all over with large irregular blotches of white: it is brought from the East Indies, and is about two inches and a half in length, and about an inch in diameter.

TILE, or **TYLE**, among builders. See *Tyle*.

TILLIA, the lime-tree, in botany, a genus of plants, the corolla of which consists of five oblong and obtuse petals, crenated at the points: the fruit is a coriaceous, globose, quincquelocular capsule, containing a single roundish seed in each. However, one seed only of the five usually ripens, and the very cells of the others often disappear, so that the fruit seems unilocular. Mr. Miller enumerates four sorts of lime-trees: however, he says all of them may be easily propagated by layers, which in one year will take good root, and may then be taken off and planted in a nursery, at four feet distance row from row, and two feet asunder in the rows. The best time to lay them down, and to remove them, is when their leaves begin to fall, that they may take root before the frost comes on, tho' they may be transplanted any time from September to March, in open weather; but if the soil is dry, it is much the better way to remove them in autumn, because it will save a great expence in watering, especially if the spring should prove dry. In this nursery they may remain four or five years, during which time the ground should be dug every spring, and constantly kept clear from weeds, and the large side roots pruned off, to cause them to advance in height; but the small twigs must not be pruned off from the stems, because these are absolutely necessary to detain the sap, for the augmentation of their trunks, which
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are apt to shoot up too slender, when they are entirely divested of all their lateral twigs. If the soil in which they are planted, be a fat loam, they will make a prodigious progress in their growth, so that in three years time they will be fit to transplant out where they are to remain. They may also be propagated by cuttings; but as this method is not so certain as by layers, the other is generally practised. In order to obtain proper shoots for laying down, a lime-tree is cut down close to the ground, from the roots of which a great number of strong shoots are produced the following year; these will be large enough to lay down the following autumn, especially if the smallest of them are cut off close early in the summer; for when too many shoots are suffered to grow all the summer, they will be much weaker, than if only a sufficient quantity is left.

There are some persons who raise these trees from seeds, which although it is a slower way, yet when the trees are designed to grow large, is the best method; and if they are only once transplanted, are shorter lived than those which remain in the places where they arose from the seeds, and their timber will be sounder, and grow to a much larger size.

When this method is practised, the seeds should be sown in autumn, soon after they are ripe, upon a shady border of moist light soil, where the plants will come up the following spring; but when the seeds are kept out of the ground till spring, the plants will not come up till the year after. When the plants appear, they should be constantly kept clean from weeds till the following autumn; then they should be carefully taken up, and transplanted into a nursery, where they may grow two or three years to get strength, and then they may be planted where they are designed to remain; for the younger they are planted out the more they will thrive.

The timber of the lime-tree is used by the carvers, it being a soft light wood, as also by architects for framing the models of their buildings; the turners likewise use it for making light bowls, dishes, &c. but it is too soft for any strong purposes.

These trees will continue growing, and remain sound a great number of years, and if planted in a good loamy soil, will grow to a considerable bulk. Mr. Miller says he measured one of those trees, which was near ten yards in girth, two feet above the ground, and was then in a thriv-

ing condition; and Sir Thomas Brown mentions one of these trees, which grew in Norfolk, that was sixteen yards in circuit, a foot and a half above the ground, in height thirty yards, and in the least part of the trunk it was eight yards and a half.

TILLER, in husbandry, denotes a young tree, left to grow till it be fitable for timber.

TILLER of a Ship, a strong piece of wood fastened in the head of the rudder, and in small ships and boats called the helm. In ships of war, and other large vessels, the tiller is fastened to the rudder in the gun room; and to the other end there are ropes fastened, which pass upwards to the quarter-deck, where the ship is steered by means of a wheel.

TILLAGE, in husbandry, the opening, breaking, and dividing the ground by the spade, the plough, the hoe, or other like instruments.

The finer any land is made by tillage, the richer it will become, and the more plants it will maintain; and it has been frequently observed, that in a large field, where at some time one part of the ground has been better tilled than the rest, that part of the ground has produced the best crops, and been easily distinguished by it from the rest of the field, even six or seven crops after the time of the particular good tillage. A piece of ground being once made finer than the rest, will a long time shew the advantage of it; because the dews have more power to enrich it, they penetrating farther than the superficies, whereby the roots are able to enter. The fine parts of the earth are impregnated throughout their whole substance with some of the riches carried in by the dews, and there deposited, until, by tillage, the inside of those fine parts become superficies; and as the corn drains them, they are again supplied as before: but the rough large parts cannot have that benefit, and the dews not penetrating but to their surface, they remain poor. The experiments mentioned by Mr. Evelyn, prove this beyond contest. Take the most barren earth you can find, powder it well, and expose it abroad for a year, incessantly agitating it; and after this without any other management, this earth will be the most fertile that can be conceived, and will readily receive any plant from the farthest Indies; all vegetables will prosper and flourish in this once barren earth, and bear their fruit as kindly with

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with us, under a due degree of artificial heat, as in their native climates. The artificial dust will entertain plants which refuse dung and other violent applications, and has a more nutritive power than any artificial dung or compost whatsoever: and by this pulverising and exposing, the very nature of a soil may be changed, and the toughest clay made as light and friable as common light earth, and as fit for the nourishment of the tenderest plants as any other; though, in its natural condition, its pores were too small to give way to their tender roots, and had no communication one with another.

This is a sort of improvement of land that cannot be practised in the large way, in fields, &c. but as it only consists in dividing and breaking the particles of earth, and exposing them thus broken to the air, it is plain that common tillage approaches more or less to it, as more or less labour is employed; and the experiment proves, that the farmer need never fear bestowing too much tillage on any sort of ground.

TILLOTSON, JOHN, was the son of Robert Tillotson of Sowerby, in the parish of Halifax in Yorkshire, clothier, and was born there in the year 1630. He studied in Clare-hall, Cambridge, and in 1656 left his college, in order to become tutor to the son of Edmund Prideaux, esq; of Ford-abbey in Devonshire. He was afterwards curate to Dr. Hacket, vicar of Cheshunt, in Hertfordshire. In 1663, he was presented to the rectory of Ketton or Keddington, in the county of Suffolk; but was the next year chosen preacher to Lincoln's-Inn, when he procured Ketton to be bestowed on his curate. He was greatly admired in London for his Sermons, and the same year was appointed Tuesday lecturer at St. Laurence's church, London, where his lectures were frequented by all the divines of the city, and many persons of quality and distinction. In 1666, he took the degree of doctor of divinity at Cambridge; in 1669, was made prebendary of Canterbury; in 1672, was admitted dean of that cathedral, and three years after was made a prebendary of St. Paul's cathedral, London. In 1679 he became acquainted with Charles earl of Shrewsbury, whom he converted from popery, and the next year refused to sign the clergy of London's address of thanks to king Charles II. for not agreeing to the bill of exclusion of the duke of York. In 1683, he visited the unhappy lord Russell when under condemnation, and attended

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him in his last moments on the scaffold. In 1689 he was installed dean of St. Paul's; made clerk of the closet to king William and queen Mary, and appointed one of the commissioners to prepare matters to be laid before the convocation, in order to a comprehension of all protestants, as well dissenters as churchmen; but this attempt was frustrated by the zeal of those members of that body, that refused to admit of any alteration in things confessedly indifferent. On the 31st of May, 1691, Dr. Tillotson was consecrated archbishop of Canterbury; but on the 17th of November, 1694, he was seized with a sudden illness which proved fatal to him. The first attack came upon him when he was at chapel. He bore it with his usual neglect of himself, and would neither interrupt nor break off from his sacred exercises to look after his health. The fit came on slowly, but soon turned to a dead palsy, when it became very uneasy for him to speak. He said that he had no burthen on his conscience; expressed no concern to live, nor fear to die; but patiently bore his burthen till he sunk under it, after five days illness, on the 21st of November, 1694, in the sixty-fifth year of his age. He was interred in the church of St. Lawrence Jury, London, where a neat monument is erected to his memory. It is remarkable, that while this truly great man was in a private station, he always laid aside two tenths of his income for charitable uses. King William, after the archbishop's death, never mentioned him but with some testimony of his esteem for his memory, and often used to tell his son-in-law Mr. Chadwick, "I loved your father; I never knew an honest man; and I never had a better friend." One volume in folio of Dr. Tillotson's Sermons was published in his life-time, and corrected by his own hand: these Barbeyrac translated into French, in six volumes octavo. Those which came abroad after his death, from his chaplain Dr. Barker, made two volumes in folio, the copy of which was sold for 2500l. and this was the only legacy he left his family, his extensive charity consuming all his yearly revenues as fast as he received them.

TILT-BEAT, a boat covered with a tilt; that is, a cloth or tarpawling, sustained by hoops, for the sheltering of passengers.

TIMBER includes all kinds of felled and seasoned woods used in the several parts

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parts of building, as carpentry, joinery, turnery, &c. The sorts of timber are numerous; we shall only mention some of the most useful from Evelyn's Sylva, &c. — as 1. Oak, the uses of which need no enumerating: to endure all seasons and weathers, there is no wood like it; hence its use in building ships, in posts, rails, &c. For water works it is second to none, and where it lies exposed both to air and water, there is none equal to it.

2. Elm. This felled between November and February is all spine or heart, and no sap, and it is of singular use in places where it is always wet or dry; its being tough makes it useful to wheel-wrights, mill-wrights, &c. and its not being liable to break and fly in chips, makes it fit for dressers and planks to chop on.

3. Beech: its chief use is in turnery, joinery, and upholstery, and the like, as being of a white, fine grain, and not apt to bend or split. Of late it is used for building timber, and if it lie constantly wet, is judged to out-last oak.

4. Ash: its use is almost universal; it is good for building where it may lie dry. It serves the carpenter, cooper, turner, plough-wright, wheel-wright, gardener, and at sea for oars, handspikes, and many other uses.

5. Fir, commonly known by the name of deal, is of late much used in buildings, especially within doors, for stairs, floors, wainfoot, and most works of ornament.

6. Walnut-tree is of universal use, unless for the outsides of buildings; very fit for the joiner's use, being of a more curious brown-colour than beech, and less subject to worms.

7. Chestnut-tree, next to oak, is the timber most sought for by joiners and carpenters: it is very lasting.

8. Service-tree, used in joinery, as being of a delicate grain, and fit for curiosities: it also yields beams of considerable bigness for building.

9. Poplar, aspen: this and aspen differing very little in their nature, are of late much used instead of fir; they look as well, and are more tough and hard.

10. Alder, much used for sewers, or pipes, to convey water; when always wet, it grows hard like a stone, but soon rots, if it is alternately wet and dry.

The uses of timber are so many and so great, that the procuring a sufficient supply of it extremely well deserves the care of every state, as it must be a great disadvantage to it to be obliged to have recourse to its neighbours, and purchase, at a very

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considerable and continually renewed expence, what might, by an easy economy, be sufficiently supplied at home.

Preserving of TIMBER. — When boards, &c. are dried, seasoned, and fixed in their places, care is to be taken to defend and preserve them; to which the smearing them with linseed-oil, tar, or the like oleaginous matter, contributes much.

For measuring hewn or square timber, the custom is, to find the middle of the length of the tree, and there to measure its breadth, by clapping two rules to the sides of the tree, and measuring the distance betwixt them; in like manner they measure the breadth the other way. If the two be found unequal they are added together, and half their sum is taken for the true side of the square.

TIMBRE, or TIMMER, in heraldry, denotes the crest of an armory, or whatever is placed at the top of the escutcheon, to distinguish the degree of nobility, either ecclesiastical or secular.

TIME, a succession of phenomena in the universe; or a mode of duration, marked by certain periods or measures, chiefly by the motion and revolution of the sun. The idea of time, in the general, Mr Locke observes, we acquire by considering any part of infinite duration as set out by periodical measures: the idea of any particular time or length of duration, as a day, an hour, &c. we acquire, first by observing certain appearances at regular, and, seemingly, at equidistant periods. Now by being able to repeat those lengths or measures of time, as often as we will, we can imagine duration, where nothing really endures or exists; and thus we imagine to-morrow, next year, &c. Some of the latter school philosophers define time to be the duration of a thing, whose existence is neither without beginning nor end: by which, time is distinguished from eternity.

Time is distinguished into absolute and relative. Absolute time is time considered in itself, and without any relation to bodies, or their motions. This flows equally, that is, never proceeds faster or slower, but glides on in a constant, equable tenor. Relative time is the sensible measure of any duration by means of motion. For since that equable flux of time does not affect our senses, nor is any way immediately cognizable thereby, there is a necessity for calling in the help of some nearly equable motion to a sensible measure, whereby we may deter-

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measuring its quantity, by the correspondency of the parts of this with those of that. Hence, as we judge those times to be equal which pass while a moving body, proceeding with an equable velocity, passes over equal spaces: so we judge those times to be equal which flow while the sun, moon, and other luminaries, perform the revolutions, which, to our senses, are equal. But since the flux of time cannot be accelerated nor retarded, whereas all bodies move sometimes faster and sometimes slower, and there is, perhaps, no perfectly equable motion in all nature, it appears hence to follow, that absolute time should be something truly and really distinct from motion. For let us suppose the heavens and stars to have remained without motion from the very creation, does it hence follow, that the course of time would have been at a stand? Or, rather, would not the duration of that quiescent state have been equal to the very time now elapsed?

Astronomical TIME, that taken purely from the motion of the heavenly bodies without any other regard.

Civil TIME, the former time accommodated to civil uses, and formed and distinguished into years, months, days, &c.

TIME, in music, an affection of sound, whereby we denominate it long or short, with regard to its continuance in the same degree of time. Common or duple time, is of two species. 1. When every bar or measure is equal to a semibreve, or its value, in any combination of notes of a lesser quantity. 2. When every bar is equal to a minim, or its value, in lesser notes. The movements of this kind of measure are various, but there are three common distinctions; the first slow, the second brisk, and the third very quick. See *Character*.

TIME, in fencing. There are three kinds of time; that of the foot, that of the foot, and that of the whole body. All the times that are perceived out of their measure, are only to be considered as appeals, or feints, to deceive and amuse the enemy. See *Fencing*.

TIN, a well known whitish metal, softer than silver, yet much harder than lead. Tin is the lightest of all the metals; it is remarkable for a quality that no other of them has, which is, that when bent it makes a crackling noise. It is harder than lead, but less so than any other of the metals: it is malleable in a very remarkable degree, though less so

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than lead: it may be easily drawn into a coarse wire, but if this be attempted to be brought to any degree of fineness, it snaps and breaks under the workman's hands. Tin is less susceptible of rust than most of the other metals: it is very little elastic, and scarce at all sonorous. It melts with a much smaller degree of fire than any other metal, a heat but a little greater than boiling water being sufficient to fuse it. It melts before it grows red-hot, like lead; and a degree of heat so much less even than that requisite to the running of lead, is necessary to the fusing of this metal, that it may be easily separated from the other by eliquation; and if the fire be kept under a mixed mass of the two, so low as to be just hot enough to melt the lead, the tin will all run off from it. Tin amalgamates very readily with mercury, and may be mixed in fusion with most other metals, and as readily separated from them again by the beforementioned process of eliquation. It is the least simple of all the metals, being brought, by a very small degree of fire, to emit sulphureous fumes: these are plainly the absolute sulphur of the metal. They do great injury to the people employed to work upon it, rendering them pale, and often absolutely destroy them.

The virtues of tin, as a medicine, given internally, have been celebrated by many of the ancient writers, but it has less credit at present. We have been told that in diseases of the lungs, and in disorders of the head and uterus, there is scarce any thing equal to it; and that in convulsions, epilepsies, and the madness arising from the bite of a mad-dog, it was a certain remedy. These last are the only cases in which it has any degree of credit at present, and that is rather among the vulgar than among physicians.

In the manufactures, it is of great use in folders, and when amalgamated with mercury, and a little bismuth added to make it run thin, it serves in the silvering of looking-glasses. By calcination it makes a soft powder called putty, of great use in polishing glass and gems, and also in making enamels.

The preparations of tin are, 1. Powdered tin, made by pouring melted tin into a wooden box, the inside of which is chalked all over, and briskly shaking it till cold, when a part of it will be found reduced to powder, which is said to be good for worms, but we have no certain

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certain accounts of its good effects. 2. Salt of tin, obtained by pouring distilled vinegar upon calcined tin, heating the solution till it near boils, and afterwards evaporating it to a pellicle, and setting it in a cool place; then there will shoot very pellucid and hard crystals, which are recommended in histeric cases, to be given from two to four or five grains at a dose. 3. The antihæstic of Poterius. 4. The aurum musivum, or, as it is commonly called, mosaicum, mosaic gold.

To these preparations used in medicine, we may add one well known as a cosmetic: it is a majesty of tin prepared in the manner of that of bismuth, by first mixing six ounces of spirit of nitre with one ounce of spirit of sea-salt, and then putting tin into this liquor, or aqua regia, till it is capable of holding no more; lastly, pour the solution into six or eight quarts of spring water, and the tin will be precipitated in form of a white powder, which should be washed several times, and then dried for the use of the ladies in pomatums, to render the skin white and soft.

TIN HATCH, in mining, a term used by the people of Cornwall, to express the opening into a tin-mine. They also call it a tin-shaft.

TIN PLATES, an article of manufacture very common among us, and vulgarly called tin. It is iron plated over with tin. The French call it *fer blanc*, white iron; as we do sometimes in England. It was once known under the distinct name of latten.

TINCTURE, in pharmacy and chemistry, a separation of the finer and more volatile parts of a mixed body, made by means of a proper menstruum dissolving and retaining the same.

TINCTURE of Antimony, *Tinctura Antimonii*, is thus made. Take salt of tartar a pound, antimony half a pound, rectified spirit of wine a quart: reduce the antimony to a powder, and mix it with the salt by fusion over a strong fire. When it is cold, powder it, and pour on the spirit of wine; digest them together three or four days in a sand heat, and then filter off the clear tincture for use. The salt of tartar yields a tincture as well as the antimony.

TINCTURA *Fætida*, the stinking tincture, a form of medicine in the late London Dispensatory prepared in this manner: take assa-fœtida four ounces, rectified spirit of wine a quart, digest them

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together for some time, and then strain off and filter the tincture through paper.

TINCTURA *Sacra*, a tincture of aloes, called also *hiera picra*. The late London Dispensatory has ordered this to be made of only eight ounces of aloes, and two ounces of winter's bark powdered, and put into five quarts of white wine, which is to be shook often, and kept in fusion a week or more without heat, and then strained off for use.

TINCTURA *Saturnina*, the lead tincture, a name given in the late London Dispensatory to the tincture before called *tinctura antiphthistica*.

It is made of sugar of lead and green vitriol, each two ounces; of rectified spirit a quart. The salts are separately to be reduced to powder, and then put into the spirit; then the whole is to stand some days without heat to extract the tincture, and afterwards filtered through paper.

TINCTURA *Sena*, a form of medicine prescribed in the new London Pharmacopœia, and intended to stand in the place of the medicine commonly called elixir salutis, and Dassy's elixir. It is thus made: take stoned raisins sixteen ounces, leaves of sena a pound, carraway seeds an ounce and half, cardamom-seeds half an ounce, proof spirit a gallon; digest all together without heat, and, when the tincture is well extracted, press off the spirit, and filter it for use.

TINCTURA *Syptica*, a form of medicine made with very little trouble and apparatus, and serving to supply the place of that elaborate preparation the tincture of Helvetius; it is prescribed in the late London Pharmacopœia, and is to be made by mixing a drachm of calcined green vitriol with a quart of French brandy, tintured by the cask; this is to be shook together that the brandy may turn black, and then strained off for use. *Pemb. Lond. Dispens.*

TINCTURE is also applied by the heralds, to the colour used in escutcheons, or coats of arms; under which may be likewise reduced the two metals, or and argent, because often represented by yellow and white.

TINGING of Marbles. The art of doing this has, in several persons hands, been a very lucrative secret, though there is scarce any thing in it that has not at one time or other been published. Kircher has the honour of being one of the first, who published any thing practicable

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about it. This author meeting with stones in some cabinets supposed to be natural, but having figures too nice and particular, to be supposed of nature's making, and these not only on the surface, but sunk through the whole body of the stones, was at the pains of finding out the artist who did the business; and on his refusing to part with the secret on any terms, this author, with Albert Genter, a Saxon, endeavoured to find it out; in which they succeeded at length very well. The method is this: Take aqua fortis and aqua regia of each two ounces, sal armoniac one ounce, spirit of wine two drams, about twenty-six grains of gold, and two drams of pure silver; let the silver be calcined and put into a vial, and pour upon it the aqua fortis; let this stand some time, then evaporate it, and the remainder will first appear of a blue and afterwards of a black colour. Then put the gold into another vial, pour the aqua regia upon it, and when it is dissolved, evaporate it as the former. Then put the spirit of wine upon the sal armoniac, and let it be evaporated in the same manner. All the remainders, and many others made in the same manner from other metals, dissolved in their proper acid menstrua, are to be kept separate, and used with a pencil on the marble. These will penetrate without the least assistance of heat, and the figures being traced with a pencil on the marble, the several parts are to be touched over with the proper colours, and this renewed daily till the colours have penetrated to the desired depth into the stone. After this, the mass may be cut into thin plates, and every one of them will have the figure exactly represented on both surfaces, the colours never spreading. The nicest method of applying these, or the other tinging substances, to marble, that is to be wrought into any ornamental works, and where the back is not exposed to view, is to apply the colours behind, and renew them so often till the figure is sufficiently seen through the surface on the front, though it does not quite extend to it. This is the method that, of all others, brings the stone to a nearer resemblance of natural veins of this kind.

TINNING, the covering or lining any thing with melted tin, or with tin reduced to a very fine leaf. Looking-glasses are foliated, or tinned with thin plates of beaten tin, the whole bigness of

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the glass, applied or fastened thereto by means of quicksilver.

TINNITUS AURIUM, a noise or buzzing in the ear, when it receives sounds which do not exist, or at least which are not produced by the motion of the external air; and the ear being filled with a certain species of sound, cannot admit other sounds, unless they are very violent. The tinnitus is of two kinds, the one proceeding from a distemperature of the organ of hearing, the other from a disorder of the brain.

TIPSTAFF, an officer who attends the judges with a kind of staff tipped with silver, and takes into his charge all prisoners who are committed or turned over at a judge's chambers.

TIRE, or **TEER** of *Cune*, in the sea language, a row of cannon placed along a ship's side, either above, upon deck, or below, distinguished by the epithets of upper and lower tires.

TITANS, in the heathen mythology, the offspring of Titan, the elder brother of Saturn, upon whom, and his son Jupiter, they made war, in order to recover the sovereignty of which Titan had been deprived. The poets represent them as a race of giants, sprung from the earth, and invading heaven; and tell us, that Jupiter overcame them with thunder, and drove them down to the very bottom of hell.

TITHES, in law, denote the tenth part of the increase that annually arises from the profits of lands, and the industry of the parishioners, which is payable for the maintenance of the parson of the parish. Tithes, it is observed, are of three kinds, predial, personal, and mixed. Predial tithes are such as immediately arise from the land, whether it be by manuring, or its own nature; as corn, grain, hay, wood, fruit, and herbs, which are said to be due without the deducting the costs. Personal tithes are those which only arise from a person's labour and industry, they being a tenth part of his gains in trade, &c. after charges deducted; but this is seldom paid in England, and when it is, it is always due by custom, and payable where the party dwells, hears divine service, &c. Mixed tithes are such as arise not directly from the ground, but from cattle and other things that receive their nourishment from, and are maintained thereout; as calves, colts, pigs, wool, lambs, milk, &c. Tithes are further divided

into great and small; great, are corn, hay, and wood; small comprehend all other predial tithes besides corn, &c. as likewise such tithes as are personal and mixed: the great tithes generally belong to the rector, and the small to the vicar. It has been held, that where land is barren, and not manurable without extraordinary charge, such land being converted into tillage, shall, for the first seven years after the improvement, be free from paying tithes; but during that space of time it shall pay such small tithes, as have been usually paid before, and afterwards the full tithe, according as it is improved: nevertheless, if land is suffered to be over-run with bushes, or become unprofitable through want of husbandry, in that case it cannot properly be called barren; and if the same be grubbed up, or ploughed and sowed, it immediately pays tithes. As to corn it is tithed by the tenth cock, or sheaf, which if the owner does not set out, he is liable to an action upon the statute; likewise where a parishioner will not sow the land, the parson may bring his action against him. On the other hand, when the tithes are set forth, if the parson do not carry them away in a reasonable time, but lets the same be too long on the ground, to the prejudice thereof, he may be also subject to an action.

Where a quaker refuses either to pay or compound for great or small tithes, the two next justices of the peace may, on complaint thereof made, summon such quaker before them, and after examining the matter of complaint on oath, may, by order under their hands and seals, direct the payment in all cases under ten pounds. And if, after such order made, the quaker refuses to comply therewith, any one of the justices may by warrant order the same to be levied by distress, &c. See 7 and 8 Wil. III. c. 34. which, by 1. Geo. I. c. 6. is made perpetual.

TITLE, an appellation of dignity, or quality, given to princes, and other persons of distinction. Thus, the title of his Britannic majesty, is king of Great Britain, France, and Ireland; that of the French king, is king of France and Navarre: and so of others. The pope assumes the title of holiness, and the cardinals that of eminence, &c.

TITLE; in law, denotes any right which a person has to the possession of a thing; or an authentic instrument, whereby he can prove his right.

As to the titles of the clergy, they de-

note certain places wherein they may exercise their functions. There are several reasons why a church is called Titulus; but that which seems to be the best, is because antiently the name of the saint to whom the church was dedicated, was engraved on the porch, as a sign that the saint had a title to that church: and from thence the church itself was afterwards called Titulus. In this sense a title signifies the church to which a clergyman was admitted, and where he is constantly to reside: and by the canons none shall be ordained without a title. This is in order to keep out such from the ministry who, for want of maintenance, might bring a disgrace upon the church, can. 31. In short, according to some writers, such a title is an assurance of being preferred to an ecclesiastical benefice; that is to say, a certificate that the clerk is provided of some church or place, or where the bishop that ordains him, intends shortly to admit him to a benefice or curacy then void.

TITMOUSE, in ornithology, a genus of birds, the beak of which is of a tubulated form, and the point of the tongue truncated. Of this genus there are many elegant species, among which the crested and blue titmouse are not the least beautiful.

TITUBATION, or **TREPIDATION**, a kind of libration, or shaking, which the ancient astronomers attributed to the crystalline heavens, in order to account for certain irregularities which they observed in the motions of the planets.

TITULAR, denotes a person invested with a title, in virtue of which he holds an office or benefice, whether he perform the functions thereof or not. The appellation of titular is frequently also given to a person who has the title and right of an office or benefice, but without having possession, or discharging the functions thereof.

* **TITYUS**, in fabulous history, the son of Jupiter and the nymph Elara, the daughter of the river Orchomenius. Elara becoming pregnant, Jupiter, to avoid the resentment of Juno, concealed her in a cavern, till she bore Tityus, who being very large, she died in labour. The infant being nourished by the earth, grew to a monstrous bulk, and resided in Panopæa, became formidable for his rapine and cruelty, till he was killed by Apollo for endeavouring to ravish Larona; when being cast into Tartarus, he was chained on his back, and covered with his body

nine acres. In this posture two vultures continually preyed on his liver, which grew again with the moon.

TMESIS, in grammar, a figure whereby a compound word is separated into two parts, and one or more words placed between them: thus, for *quæcunque*, Virgil says, *quæ me cunque vocant terræ*, &c.

TOAD, *Rubeta*, in zoology, belongs to the same genus with the common frog. See *Frog*.

The toad is larger than the frog, with a thick body, a broad back, and the belly swelled and inflated: its skin is considerably thick, and full of tubercles, of a dusky and blackish colour on the back, and spotted on the belly: it is naturally a loathsome and disagreeable object.

TOBACCO, in botany, a genus of plants, whose flower is monopetalous and funnel-shaped; the tube is longer than the cup; and the limb, which spreads open is divided into five acute-pointed segments; the stamina consists of five subulated filaments, topped with oblong anthers; the fruit is an oval capsule, with a furrow on both sides, opening at the top in two cells, which contains a great many rough kidney shaped seeds. There are several species of tobacco; the flowers of some are less acute-pointed than others; they are all natives of America, and brought originally from thence, and at first were in great esteem for their medicinal qualities. This plant was not known in Europe, till after the discovery of America by the Spaniards: The Americans on the continent call it *petum* and those of the islands *yoli*. It was first brought into Europe by M. Nicot, from the island Tobago, in America, about the year 1560, whence its English name; and is now cultivated for medicinal use in our gardens. It is perennial, as is said, in America; and annual with us. Tobacco is cultivated in several parts of America, particularly in the Caribbe Islands, Virginia, &c. where they are forced to mix ashes with the soil, to prevent its rising too thick. After sowing, they water it every day; and on very hot days cover it up, to prevent its being scorched by the sun.

The marks of good twist-tobacco, are a fine shining cut, and an agreeable smell. Tobacco is either taken by way of snuff, as a sternutatory, or as a masticatory, by chewing it in the mouth, or by smoaking it in a pipe. It is sometimes also taken in little longish pellets put up the

nose, where it is found to produce very good effects, to attract a deal of water or pituita, unload the head, resolve catarrhs, and make a free respiration; for the subtle parts of the tobacco in inspiration, are carried into the trachea and lungs, where they loosen the peccant humours adhering thereto, and promote expectoration. Some have left this tobacco in their noses all night; but this is found to occasion vomiting the next morning. Another thing charged on this way of application, is, that it weakens the sight. When taken in great quantities in the way of snuff, it is found to prejudice the smelling, greatly diminishes the appetite, and in time gives rise to a phthisis. That taken in the way of smoak, dries and damages the brain. Borghi, in a letter to Bartholine, mentions a person who, through excess of smoking, had dried his brain to that degree, that after his death there was nothing found in his skull but a little black lump, consisting of mere membranes.

TOD of Wool, a quantity containing twenty-eight pounds, or two stone.

TOES, called by anatomists *digiti pedis*, the extreme divisions of the feet, answering to the fingers of the hands. They bones of the toes of both feet are twenty-six in number, sometimes twenty-eight; being much slenderer, except that of the great toe, than those of the fingers: they have also a much less free motion than those of the fingers: the great toe has only two bones, and the rest three; except the little toe in very old people, in whom the two extreme phalanges of the little toe grow together, so as to form only one bone; whence we find, in this case, fewer bones in each foot than thirteen.

TOGA, in Roman antiquity, a wide woollen gown or mantle; which seems to have been of a semi-circular form, without sleeves; differing both in richness and largeness, according to the circumstances of the wearer, and used only upon occasion of appearing in public. Every body knows that the toga was the distinguishing mark of a Roman: hence the *jus togæ*, or privilege of the toga, was the same with the privilege of a Roman citizen; that is, the right of wearing a Roman habit, and of taking, as they explain it, fire and water through the Roman empire.

TOILS, snares or nets used by hunters for catching wild beasts, as deer, &c.

TOILET, a fine cloth of linen, silk,

or

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or tapestry, spread over the table in a bed-chamber or dressing room, to undress and dress upon.

TOISE, a French measure containing six of their feet or a fathom.

TOISON D'OR, a term, in heraldry, for a golden fleece, which is sometimes borne in a coat of arms.

TOLERATION, in matters of religion, is either civil or ecclesiastical. Civil toleration, is an impunity and safety granted by the state to every sect that does not maintain doctrines inconsistent with the public peace: and ecclesiastical toleration, is the allowance which the church grants to its members to differ in certain opinions, not reputed fundamentals. The term toleration has made a great figure in the disputes among protestants, who have been exceedingly divided about the measures of toleration, or the degrees to which heretics and schismatics are, or are not to be suffered.

TOLL, in law, a tax or custom paid for passage, or for the liberty of selling goods in a market or fair. Hence, toll-booth is a place in a town where goods are weighed, in order to ascertain the duties thereon.

TOLUIFERA, in botany, a genus of plants, the flower of which is composed of five petals, which are inserted into the cup; four of these are straight and equal in size, and are a little longer than the cup; but the fifth is twice as large as these, and is cordated at the end, and has an unguis of the length of the cup. The fruit and seeds are yet unknown. It is so called, from its producing the balsam of Peru. See *Balsam*.

TOMB includes both the grave or sepulchre wherein a defunct is interred, and the monument erected to preserve his memory.

TOME, in matters of literature, denotes a bound book, or writing that just makes a volume.

TOMENTUM, properly signifies flocks or locks of wool; but by botanists is used for that soft downy matter which grows on the leaves of some plants.

TONE, or **TUNE**, in music, a property of sound, whereby it comes under the relation of grave and acute; or it is the degree of elevation any sound has, from the degree of swiftness of the vibrations of the parts of sonorous bodies. Tone is more particularly used for a certain degree or interval of tune, whereby a sound may be either raised or lowered

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from one extreme of a concord to the other, so as still to produce true melody.

TONGUE, in anatomy, the primary organ of taste and speech; the figure of which approaches in some degree to pyramidal; its anterior part being called apex, and its posterior part the base or root. The upper side is not quite flat, but a little convex, and divided into two lateral halves, by a shallow depressed line called *linea linguæ mediana*. The edges are thinner than the other parts, and a little rounded as well as the point. The lower side reaches only from the middle of the length of the tongue to the point. The tongue is principally composed of very soft fleshy fibres, intermixed with a peculiar medullary substance, and disposed in various manners. Many of these fibres are confined to the tongue without going any farther; the rest form separate muscles, which go out from it in different ways, and are inserted in other parts: all the upper side of the tongue is covered by a thick membrane of a papillary texture, upon which lies another very fine membrane like a kind of epidermis, which is likewise continued over the lowest side, but without papillæ.

TONGUE-TIED, the popular name for a dissemper of the tongue in children, when it is tied down too close to the bottom of the mouth, by a ligament connected all along its middle, and called its *frænum*, which requires to be divided, to give the tongue its proper motion.

TONIC, in medicine, is applied to a certain motion of the muscles, wherein the fibres, being extended, continue their extensions, in such a manner, as that the part seems immoveable, though in reality it be in motion.

TONSILS, in anatomy, two remarkable glands situated one on each side of the mouth, near the uvula, and commonly called almonds of the ears, from their resembling almonds in figure. Their use is to secrete a mucous humour for lubricating the passages: this they discharge by several irregular but conspicuous foramina into the mouth. The tonsils are apt to be inflamed from taking cold, for which Heister first advises a gentle purge of tamarinds, sena, and cream of tartar: and this is to be repeated to the third and fourth dose, if there be occasion: in the intermediate times, the diaphoretic, attenuating, and nitrous medicines are to be given in powers,

ders, and a large quantity of diluting liquors allowed, which should be gently acidulated, and have a small quantity of nitre dissolved in them: gargarisms made of decoctions of bistort-root, red roses, and other gentle astringents, are also to be frequently used; and the frequent washing the feet in warm water often has a very remarkable good effect.

This is a very troublesome complaint, and with some persons is apt to return very frequently; the best preservative against it is a moderate diet and bleeding, about the time of the equinoxes, either in the arm or foot. Some have found it necessary to open an issue in the arm, in this case, and have been by this means perfectly cured; but on its drying up have always found the disease return.

TONSURE, in ecclesiastical history, a particular manner of shaving or clipping the hair of ecclesiastics or monks. The ancient tonsure of the clergy was nothing more than polling the head, and cutting the hair to a moderate degree, for the sake of decency and gravity: and the same observation is true with respect to the tonsure of the ancient monks. But the Romanists have carried the affair of tonsure much farther; the candidate for it kneeling before the bishop, who cuts his hair in five different parts of the head, viz. before, behind, on each side, and on the crown.

TOOL, among mechanics, denotes in general any small instrument, used as well for making other more complex instruments and machines, as in most operations in the mechanic arts.

TOOTH, in anatomy, a little, hard, smooth bone, fit in the gums, and serving to masticate or chew the food, &c.

As to the cleansing of foul teeth, see *Dentifrice*.

TOOTH-DRAWING, the operation of pulling out a carious, or otherwise injured tooth. This art, according to Cicero, was invented by Æsculapius, in whose temple the ancients hung up a pair of leaden pullicans, very properly signifying that no teeth were fit to be pulled out, but such as might be removed with a leaden forceps; that is, such as were loose and ready to fall out of themselves; for they very little consult their own welfare, who pull out their teeth while firm and sound: for drawing the teeth is not only a painful operation, but often brings on bad accidents, and sometimes even hazards the patient's life.

Tooth-drawing, however wrong in

many cases, yet is certainly right and necessary in others. 1. In children, for the removing their lacteal, or deciduous teeth; for when these are left too long in their sockets, they displace the new ones, and turn them awry. 2. In infants it is also necessary to draw such teeth as grow out of the palate, or out of improper parts of the mouth, and are placed so as to impede their speaking or sucking. 3. In the tooth-ach proceeding from a tooth's being carious, and giving way to no medicides, drawing is the last resort, and is absolutely necessary. 4. Those teeth ought to be drawn which by their irregular figure and position lacerate the gums and lips, and cannot be brought into shape by the file. And lastly, it is sometimes necessary to draw a tooth for the curing a fistula, or ulceration of the gums near the roots of the teeth.

The regular method of drawing them is this: if the tooth is in the lower jaw, the patient must be seated on a low seat, or on the floor; and if in the upper jaw, he must be placed on a high stool, or table; then the proper instrument is to be selected, and the tooth carefully drawn as a nail out of a piece of wood. But this must never be done while the gums are inflamed, swelled, or otherwise dis-tempered.

TOP of a Ship, a round frame of boards lying upon the cross-trees near the head of the mast; here they furl and loose the top-sail, &c.

TOP-ARMOUR in a Ship of War, a kind of cloths hung about the round-tops of the masts for shew; and also to hide the men which are on top in a fight, who lie there to sling flint pots, &c. or to fire small shot down on the enemy, in case of boarding.

TOP-MASTS of a Ship, are four, which are made fast and settled unto the heads of the main-mast, fore-mast, mizen-mast, and bow-sprit respectively.

TOP-GALLANT MASTS of a Ship, are two, viz. main-top-gallant mast, and fore-top-gallant mast, which are small round pieces of timber, set on their respective top-masts; on the top of which masts are set the flag-staffs, on which the colours, as flags, pendants, &c. hang.

TOP-ROPES of a Ship, those with which the top-masts are set or struck; they are received through a great block which is seized on one side under the cap, and then are reeved through the heel of the top-mast, where is a brass shiver placed

placed athwart ships; after this they are brought up and fastened on either side the cap with a ring; the other part of them comes down by the ties, and so is reeved into the knight-head; and, when it is to be heaved, it is brought to the capstan. These top-ropes belong only to the main and fore-mast.

TOP-SAILS and **TOP-GALLANT-SAILS** of a Ship, are those belonging to the top-masts and top-gallant-mast.

TOP A STARBOARD, on board a ship, a word of command to hale upon the larboard lift.

TOP the Yard-arms, on board a ship, a word of command to make the yards hang higher or lower.

TOPAZ, in natural history, a gem called by the ancients chrysolite, as being of a gold colour.

TOPHUS, in medicine, denotes a chalky or stony concretion in any part of the body, as the bladder, kidneys, &c. but especially in the joints.

TOPIC, in rhetoric, a probable argument, drawn from the several circumstances of a fact, &c.

TOPICS, or **TOPICAL MEDICINES**, the same with external ones, or those applied outwardly to some diseased and painful part: such are plasters, cataplasms, unguents, &c.

TOPOGRAPHY, a description or draught of some particular place, or small tract of land, as that of a city or town, manor or tenement, field, garden, house, castle, or the like, such as surveyors set out in their plots, or make draughts of, for the information and satisfaction of the proprietors.

TORCH, a luminary used in several church-ceremonies, funerals, &c. and more usually called a flambeau.

TORDYLHUM, in botany, a genus of plants, the flower of which is umbellated; and the principal umbel is composed of many small ones, compounded of many rays; the involucre of the great umbel is composed of narrow leaves, as long as the rays of the umbel; those of the rays are half the length; the umbels are deformed; the flowers have five heart-shaped inflexed petals, which are equal; they have each five hair-like stamina terminated by single summits, and a roundish germen situated under the flower, supporting two small styles crowned by obtuse stigmas. The germen afterwards turn to a roundish compressed fruit longitudinally indented, dividing in two parts each con-

taining one roundish compressed seed with an indented border.

TORÉ, in architecture, a large round moulding, used in the bases of columns.

TORÉUTICE, that part of sculpture otherwise called turning.

TORIES, or **TORYS**, in the history of England, a faction or party opposed to the whigs. The tories are great sticklers for the prerogative of the crown, as the whigs are for the liberties and privileges of the people: though, in truth, the principles of the moderate people of both parties do not materially differ.

TORMENTIL, in botany, a genus of plants, with a rosaceous flower, consisting of four obversely cordated, plane, and patent petals; the stamina are sixteen subulated filaments, about half the length of the cup; the seeds are eight in number, oblong, obtusely acuminate, and contained in the cup, which forms a kind of globose capsule.

Tormentil-root has an austere styptic taste, accompanied with an aromatic flavour: it is one of the most agreeable and efficacious vegetable astringents: there are also a tincture and a distilled water of it, the former of which possesses all the virtues of the simple.

TORMINA, in medicine, a term sometimes used to express pain in general, but more particularly a species of pain called tormina ventris, or alvi, in English the gripes.

TORNADO, or **TURNADO**, a sudden and violent gust of wind from all points of the compass, frequent on the coast of Guinea.

TORPEDO, in natural history, a sea fish, famed, both among the ancient and modern naturalists, for a remarkable numbness wherewith it strikes the arm of those that touch it.

The torpedo is a flat fish, much resembling the thornback; sufficiently described in most treatises of fishes, and commonly found among the coasts of Provence, Gascony, &c. where the people eat it without danger. Upon touching the torpedo with the finger, it frequently, though not always happens, that the person feels an unusual painful numbness, which suddenly seizes the arm up to the elbow, and sometimes, to the very shoulder or head. The pain is a very particular species, and not to be described by any words: yet Messieurs Lorenzini, Corelli, Redi, and Reaumur, who all felt it severely, observe it to bear some resemblance to that pain-

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ful sensation felt in the arm, upon striking the elbow violently against a hard body: though, M. Reaumur assures us, this gives but a very faint idea of it.

Its chief force is at the instant it begins; it lasts but a few moments, and then vanishes entirely. If a man do not actually touch the torpedo, how near forever he holds his hand, he feels nothing: if he touch it with a stick, he feels a faint effect: if he feels it through the interposition of any pretty thin body, the numbness is felt very considerably; if the hand be pressed very strong against it, the numbness is the less, but still strong enough to oblige a man speedily to let go.

M. Reaumur accounts for the phenomena of the torpedo in this manner:—The torpedo, like other flat fishes, is not absolutely flat, but its back, or rather all the upper part of its body, a little convex: when it did not, or would not produce any numbness in such as touched it, its back, he found, always preserved its natural convexity; but whenever it would dispose itself to resent a touch or thrust, it gradually diminished the convexity of the back parts of the body; sometimes only rendering them flat, and sometimes even concave.

The very next moment the numbness always begins to seize the arm; the fingers that touched, were obliged to give back, and all the flat and concave part of the body was again seen convex: and whereas it only became flat insensibly, it returned to its convexity so swiftly, that one could not perceive any passage from the one to the other state.

The motion of the ball out of a musket is not, perhaps, much quicker than that of the fish re-assuming its situation; at least, the one is not more perceivable than the other.—It is from this sudden stroke that the numbness of the arm arises, and accordingly the person, when he begins to feel it, imagines that his fingers have been violently struck. It is the mere velocity of the stroke that produces the numbness.

M. Du Hamel, in his History of the Academy of Sciences, anno 1677, mentions a kind of torpedo, which he compares to conger eels. M. Richer, from whom he has the account, affirms, on his knowledge, that they numb the arm strongly, when touched with a staff, and that their effects even produce vertigos.

TORQUE, in heraldry, denotes a round roll of cloth, twisted and stuffed:

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such as the bandage, frequently seen in armories, about the heads of Moors, &c. It is always of the two principal colours of the coat; and is accounted the least honourable decoration worn on the helmet, by way of crest.

TORREFACTION, in chemistry, the roasting or scorching of a body by the fire, in order to discharge a part either unnecessary or hurtful in another operation; as sulphur is thus discharged from an ore, before the metal can be obtained to advantage.

TORRENT, in geography, a temporary stream of water, falling suddenly from mountains, whereon there have been great rains, or an extraordinary thaw of snow.

TORRID ZONE, among geographers, denotes the tract of earth lying under the line, and extending on each side to the two tropics, or to 23 degrees and a half of latitude. The ancients believed the torrid zone uninhabitable; but from the late navigations we learn, that the excessive heat of the day there is tempered by the coldness of the night.

TORT, in law, a French term signifying wrong or injury.

TORTOISE-SHELL, the shell, or rather, scales of a testaceous animal, called a tortoise; used in inlaying and in various other works, as for snuff-boxes, combs, &c. The best tortoise shell is thick, clear, transparent, of the colour of antimony, sprinkled with brown and white: when used in marquetry, &c. the workmen give it what colour they please, by means of coloured leaves which they put underneath it.

TORTURE, a grievous pain inflicted on a criminal, or person accused, to make him confess the truth.

TOUCAN, in ornithology, a species of raphastos, of a middle size between our common magpie and the thrush, but having a beak thicker and longer than its whole body: this beak is hooked at the end, and is of a very thin substance, not exceeding the thickness of a membrane, and very light and hollow, yet bony in substance, and very bright and shining. It has a sort of toothed edge, which prevents its shutting closely, and giving passage for the air, enables the bird to live without nostrils. It is yellowish on the outside and red within, and is covered with a sort of scaly substance, easily scraped off with a finger at the edge.

TOUCAN,

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TOUCAN, in astronomy, a constellation of the southern hemisphere, consisting of eight small stars, and otherwise called *Anser Americanus*.

TOUCH-HOLE, or vent, in gunnery, the small hole at the end of the cylinder of a gun or musquet, by which the fire is conveyed to the powder in the chamber. In a firelock, carabine, or pistol, it is called the touch-hole, but in a piece of canon it is more properly called the vent.

TOUCHING for the King's Evil, was first introduced by Edward the Confessor, in 1046.

TOUCH STONE, a black, smooth, glossy stone used to try metals upon.

The ancients called it *lapis Lydius*, the Lydian stone, from Lydia, a country of Asia Minor, whence it was brought.

TOULON, a strong, rich, and populous city of France, with a famous harbour, and a bishop's see. It is one of the best places in Provence, and is covered from the north winds. It is the principal town for naval stores on the Mediterranean, and is fortified with strong walls, defended with bastions. There are always men of war here, as well as other ships; and there is a very fine quay paved with bricks. Near the arsenal on the side of the quay, are magazines full of naval stores. The cathedral is remarkable for its high altar, and two fine chapels on each side, where there are several silver shrines set with precious stones. There are several other churches and convents and a school for officers, where they are taught every thing that regards the land or sea service. The harbour is defended by several forts, and is one of the best in Europe. It is 30 miles S. E. of Marseilles. Long. 6. 2. E. Lat. 43. 7. N.

TOULON, engagement off. Early in the year 1743, Admiral Matthews was sent to the Mediterranean, to assume the command of the British squadron there, which overawed all the states of Italy, and rode master of the sea; it had been conducted for some time by admiral Lestock, an inferior officer, as admiral Haddock, who had had the command, through his ill state of health, had been obliged to resign. Mr. Matthews was likewise invested with the character of minister plenipotentiary to the king of Sardinia, and the states of Italy. Immediately after he had taken his command, he ordered captain Norris, to destroy five Spanish gallees, which had put into the bay of St. Tropez, and this service was effectually performed. In may he detached commo-

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dore Rowley, with eight sail, to cruize off the harbour of Toulon, and a great number of merchant ships fell into his hands. In the beginning of July, he landed some men at St. Remo, in the territories of Genoa, and destroyed the magazines that were erected for the use of the Spanish army. In august, he sent commodore Martin, with a squadron, into the bay of Naples, to bombard that city, unless his Sicilian majesty would immediately recall his troops, which had joined the Spanish army, and promise to remain neuter during the continuance of the war. Naples was immediately filled with consternation, the king subscribed to these conditions, and the squadron rejoined the admiral in the road of Hieres, which he had chosen for his winter station. Here he remained without any thing material happening, except that captain Greaves of the Marlborough, senior captain in the Mediterranean, who had wore a broad pendant, during the time he had been abroad, and repeated signals as the superior of the third division, and commanding in the third post, having ever since January 1713, been employed in his majesty's service, always contenting himself with such employments as his superiors allotted him; now finding on his arrival at Hieres, Mr. Rowley, a junior officer, rear admiral, he immediately resigned his commission, and went home by land, greatly lamented by all his officers and ship's company, and Mr. Cornwall was appointed captain of the Marlborough. He was not master of that docility and submission, to continue serving under a junior; his spirit was not tame enough, neither would his sense of honour suffer him to be thus pliant; he therefore thought quitting the navy the only resentment in his power, as he could not bear the mortification, which he always faithfully endeavoured not to deserve, and he apprehended the injury done to his seniority, pre-eminence, and long services, entirely set him free from all subjection, or the least stain and reproach for leaving the fleet, when so fair an opportunity was ready to offer, to make known his further abilities, courage and pretension to a flag. The combined fleet of France and Spain, which had so long threatened the giving law to the Italian states, and whose commanders even boasted they were entrusted with a coup d'etat that should surprise all Europe, had lain blocked up in the harbour of Toulon, three years by an English squadron, first commanded by admiral

X x

Haddock,

Hadlock, and now by admiral Matthews, began, on the ninth of February, 1744, to come out. On the tenth they were all out, and Mr. Matthews intended to engage them, but the wind proving variable, the day was spent in making and repeating signals. On the eleventh, at nine in the morning, they being come near enough to be attacked, he made signal for the line of battle, and the rear admiral to lead, but he had the misfortune in this particular not to be exactly obeyed; the van and center confused themselves, never all in the line, nor all in action. Though his instructions they received were well concerted, and what every officer might easily understand, yet he could not enforce obedience, since they would not obey. A certain commoner in his elaborate speech, in the house of commons, said, "Mr. Matthews's orders were so confused and unintelligible, it was easy to account for the fleet's being in such disorder," but all could contradict such an assertion, who had the pleasure to hear them, and those who had their eyes open, saw with what intent such a partial representation of Mr. Matthews's conduct was represented. The combined fleet, with the greatest regularity and uniformity, approached. At twelve at noon Mr. Matthews hoisted the signals to engage and give chase, still keeping abroad the signal for the line of battle. Mr. Festock, on whom the dependance of victory lay, was now five miles astern; he was dilatory, but acted under the punctilio's of discipline, and Mr. Matthews, who had waited all the morning for his coming up, was necessitated to begin the attack without him, which he did, where Mr. Festock should have been, who blames him for his impatience, and engaging the ship he ought to have had, but all the world knew he kept aloof: his conduct was too apparent, notwithstanding the equivocations of speech, exactness of discipline, assertions of every kind, and the honourable acquittance of a court martial; it plainly appeared, he never intended to come into that station, nor any other which was a fighting one. This was the voice of the nation, and they would not be imposed on with pertinent reasons and ridiculous evasions. His conduct was guided by personal resentment, he determined not to assist him in the day of action, but let him lie exposed to a superior fire, sacrificing the honour of his country, to the gratifying his own passion. Had Mr. Matthews waited till he came up, there would have been

no enemy to engage, since the combined fleets were with all sail aboard bearing away southward. The *Namur*, admiral Matthews; *Marlborough*, captain Cornwall, went down and began the attack on the *Real*, the Spanish admiral, they engaged her very briskly within musket shot. This was an imprudent station for Mr. Matthews, he therefore returned to observe his squadron, but captain Cornwall, obliged him to return sooner than he voluntarily would, by forcing his ship a-head, between the *Namur* and *Real*. Such an uncommon example of generosity, thus to shield his admiral, was truly noble and meritorious; there he stood the incessant fire of two ships, dauntless in the midst of danger, raked fore and aft, and his masts carried away by the board. Thus the brave captain Cornwall, armed with resolution, in full pursuit of glory, eager to give all the fire, and receive it all, inflamed with the honour of his flag, which he never would suffer to be struck; zeal for his king, and love for his country, fighting his ship, fell a victim, having lost both his legs, attempting to go aloft, neither supported with the necessary assistance his distress demanded, nor supplied with a sufficiency of men. M. de Court, the French admiral, said, "He was the only British captain that did his duty, for the *Hercules* not being attacked, was in honour obliged to assist her admiral, and lying on the *Marlborough's* quarter, cleared her decks, still his firmness continued undaunted, though unaided." As well enemies as friends bemoaned the fall of so brave a man. His officers and ships company felt a greater loss in him than in Mr. Greaves, who now only served them to recall every instance of his conduct, and add new lustre to his superiority.

The *Dorsetshire* might have relieved the *Marlborough*, by taking off the *Hercules*; and though admiral Matthews sent captain Burrih, a messenger, desiring him to assist the *Marlborough*, instead of obeying, he pretended to engage the *Halcyon*, but so inadvertently, his indolence was too glaring not to be discovered: for such unaccountable misconduct he was broke. The *Norfolk*, in the mean time, attacked the *Constant*, and obliged her to sheer away. The *Real* and *Hercules* fired after her to bring her back, but in vain. Mr. Forbes of the *Norfolk*, the admiral, and Mr. Cornwall, were the only gentlemen who did their duty in the center; every other captain in this division lay at a cautious distance

distance from his enemy, and firing his shot without giving or receiving damage. Mr. P. Osborne and Mr. Cornish saw it with an emotion becoming Britons, bravely thrust themselves into the line, and attacked the Poder, but being only in frigates, it was not their province to continue there, so they were obliged to desist, and sail back to their former stations. The *Princessa*, *Somerset*, *Dragon*, *Bedford*, and *Kingston*, took occasion to fire at her, but in such a wild, confused, unjustifiable manner, it was only exposing themselves to the public ridicule. Mr. Hawke, now admiral, in the *Berwick*, burned with indignation at the sight of such scandalous behaviour, like an officer and an English seaman, bore down and gave her battle. He had no signal, nor any particular order to do this, but he thought it indispensibly his duty, since none of the ships would to whose lot she had happened to fall. He knew the boasts and exaggerations that would arise from one ship's beating off seven, and bravely prevented that ignominy, by breaking discipline to preserve honour, for the Poder was not his ship, but the *Amerique*. At the first broadside she lost twenty-seven men, and had seven of her lower deck guns dismounted. She still made a vigorous resistance; but after having had 116 men killed, her main-mast and fore-top-mast carried away, she struck. The lieutenants of several ships boarded her, claiming the honour, but Don Rodriguez, the captain, said, he held them all in contempt, except the *Berwick's*, to whom, with great politeness, he delivered his sword, declaring his honour would not suffer him to strike the Spanish colours to them. By this time the *Real* and *Marlborough* were disabled, the former quite silent. Mr. Matthews ordered the *Anne* galley to burn the *Real*, but had neglected ordering Mr. Mackay to prime her, which should have been done some time before. These extraordinary commissions of destruction are not so easily executed; she was neither covered nor conducted, which is always the practice in these cases. The *Hercules*, *Haleyon*, and *Brilliant*, who saw the impending blow, crowded all their sail on this dreadful occasion, and fired at her, but at too great a distance. The Spanish admiral shewed now more signal proofs of noble bravery than before; he was unshaken and immovable, even in the midst of dangers. We may easily conceive the consternation

his ship's crew must be in, expecting every moment to be swallowed in the flames. But Don Navarro brought seven of his lower tier guns to bear upon her, pointing and firing them with his own hands, made every shot take place, so that had no accident happened to the fireship, it seems probable she would have been sunk: he also sent a launch full of men to drive her along side the *Marlborough*, the only ship near her. Captain Mackay, as he passed the *Dorsetshire*, going down, desired her assistance to cover and conduct him; which captain Burrish refused, though ordered by the admiral. Mr. Mackay made answer, with a sigh, "Then I am going to be sacrificed." He, poor man, was obliged to go priming down alone and unassisted, so severe was his necessity! yet so great was his generosity, being conscious he must fall a victim, that he ordered his men into the boat, and bid them proceed to the ships; but the lieutenant, mate, and two others, refused, saying, they would wait for the barge which was to fetch him, who alone stood the deck, with a match in his hand; they being near drunk, went below. The launch was now so near him, what recourse must he have in this helpless condition! alas! to the fatal necessity of firing the guns in the waste. His matches were unwarily placed, hatches unladen, scuttles open, funnels uncapped, running down unprepared, and primed with a great deal of loose powder, plunged into inextricable distress, without the least glimpse of hope, every ship and every friend far off, in a few minutes she blew up, without doing execution. Had any ship gone down with her, considering the helpless condition of the *Real*, there would have been no probability of danger, nor making the intent ineffectual. Mr. Mackay was, we may say, universally beloved, and universally lamented; he arrived to this ill-fated command by a long course of obedience and diligence, and what is commonly called a thorough knowledge of his duty. In some accounts we find it asserted, that he was extremely slow and tedious in priming his ship; but these are wrong, for those who know any thing of a fireship will readily agree, she cannot be primed in less time than an hour and an half; and it was not two hours from the time of his receiving orders, to his death. To be directed upon a service, before any advice to get ready for it, is enough to confound a man;

hurry to dispatch, fear of displeasing, concern to feel what he never felt in all his service reproofs and menaces! eagerness and precipitation to execute, all help on such an occasion to excite a gust of passions, with which the conflict must be violent, and the success uncertain. It is inhuman and base in the friends of Mr. Lestock to blast the memory of a man, who had often given proofs he neither feared the enemy nor death, and who at last so bravely lost his life. In the mean time, Mr. Rowley, with part of his division, got a breast of M. de Court, and engaged him very warmly. Mr. H. Osborn, now admiral, attacked, and supported him to the utmost of his power, who, with Mr. Hawke, were the only gentlemen that fought in the van division. The French admiral seeing the danger the Spaniards were falling into, judiciously tacked to relieve them. This obliged Mr. Rowley to tack, who had not an all-sufficiency, as Mr. Lestock terms it, with seven ships to oppose nineteen, and rejoin the centre, leaving part of his van exposed to the fire of M. Cabaret, chief d'escadre of the French van; but that officer preferred the preservation of the Spaniards to the destruction of the English. Mr. Hawke now finding he could not maintain his prize, resolved to abandon her; and Mr. Matthews observing the French squadron had tacked, unfortunately gave Mr. Lestock his desired plea, by hauling down the signal to engage, and hoisting the signal to give over chase. This alteration of signals seems intended for Mr. Rowley, not Mr. Lestock, whom he had forgot. M. de Court retook the Poder, and relieved the Spanish fleet, which, if the English captains had done their duty, might have been totally destroyed before this time: but only six in the whole fleet of the line gave proofs of British valour. Mr. Lestock says, he could not come up to engage the Spaniards, yet allows some of his best sailers could, but it being a breach of discipline, he could not permit them. The truth is, he had a pique against the admiral, and if he could, either under the screen of discipline, or by any other means, it was his determined resolution not to join him; on the contrary, it was his pleasure and innate satisfaction to see him disabled and without assistance. The combined fleet, now unmolested, continued the course they had begun to steer before the action, and Mr. Matthews with his whole fleet was an idle specta-

tor. However, he soon after gave chase. At three next day, in the afternoon, he came in sight of them: they were in every kind of confusion and irregularity, fluctuating and dividing each others motions, the Real in tow, the Poder behind, which the Essex burned. The Marlborough was sent to Mahon, and replaced by the Burford, who had arrived that morning from England. It was the finest moon-light night nature could have given, and the whole fleet in exact order for the first time, an easy victory was expected. British hands and British hearts rejoiced at the glorious opportunity. Matthews foresaw, that if he made the signals to give chase and engage, Mr. Lestock would regain his honour lost the day before, which his resentment could not allow; he therefore lay asleep, while the enemy wisely took the advantage to free themselves a second time from danger, and retire with all the precipitation their shattered condition would permit. On the 17th the British fleet arrived at Mahon, where Mr. Lestock was suspended and sent home. The nation was alarmed at the miscarriage, and loudly complained, agreeable to custom on such occasions; and Mr. Lestock arrived at the only time which could have added most to his disgrace, for every body looked upon him as the delinquent. Soon after Mr. Matthews arrived (having desired leave to return on account of his bad state of health) the affair became an enquiry in parliament, which thought both to blame; but being conscious they could not precisely clear up the difficulty so well as those acquainted with maritime cases of a similar nature, they petitioned his majesty for a court-martial, which was held on the inferior officers; the captains Burrish, Ambrose, and Williams were broke. Mr. Lestock (who was tried by another court-martial, of which the late Mr. J. Byng was a principal member) was acquitted without deliberation was honourably acquitted, because he acted prudently, and agreeable to the signals: but Mr. Matthews, who fought, was broke because he acted imprudently; nay, he narrowly escaped being shot for cowardice and desertion, while Mr. Lestock triumphed on his trial. Such proceedings are hardly to be accounted for; they must be attributed to interest and party, which at this time had the predominance. It is certain that neither of the admirals wanted courage or skill; they had been on separate commands, and executed their

their commissions to the satisfaction of their country: their being united here occasioned this miscarriage; envy and resentment was their true characteristic.

TOUR, a French term, frequently used for a journey or progress through one or more countries.

*TOUR, Henry De La, viscount Turenne, marshal-general of the French king's camps and armies, marshal of France, &c. and one of the greatest generals France has produced, was the second son of Henry de la Tour, duke of Bouillon, was born at Sedan, in 1611. He made his first campaigns in Holland under Maurice and Frederic Henry, princes of Orange, who were his uncles by the mother's side, and even then distinguished himself by his bravery. In 1634 he marched with his regiment into Lorraine, and having contributed to the taking of La Mothe, was, though very young, made marshal de camp. In 1636 he took Saverne, and the year following the castles of Hirson and Sorle, on which occasion he performed an action like that of Scipio's, with respect to a very beautiful woman whom he sent back to her husband. The viscount Turenne in 1644, was made marshal of France; but had the misfortune to be defeated at the battle of Mariendal in 1645. However, he gained the battle of Nortlingen three months after; restored the elector of Treves to his dominions, and the following year made the famous junction of the French army with that of Sweden, commanded by general Wrangel; which obliged the duke of Bavaria to demand a peace. Afterwards that duke breaking the treaty he had concluded with France, he was defeated by the viscount Turenne, at the battle of Zumarhausen, and in 1648 driven entirely out of his dominions. During the civil wars in France he sided with the princes, and was defeated at the battle of Rhetel in 1650: but soon after was restored to the favour of the king, who, in 1652, gave him the command of his army. He acquired immortal honour at the battles of Jergeau, Gien, and the suburbs of St. Anthony, and by the retreat he made before the army commanded by the princes at Ville-Neuve St. George. In 1654 he made the Spaniards raise the siege of Arras; the next year he took Condé, St. Guilain, and several other places; gained the famous battle of Dunes; and made himself master of Dunkirk, Oudenarde, and almost all Flanders. This obliged the Spaniards

to conclude the peace of the Pyrenees in 1660. These important services occasioned his being made marshal-general of the king's camps and armies. The war being renewed with Spain in 1667, he commanded in Flanders, and took several many places, that in 1668 the Spaniards were obliged to sue for peace; and that year abjured the reformed religion. He commanded the French army in the war against the Dutch in 1672; took forty-five towns in twenty-two days; pursued the elector of Brandenburg even to Berlin; gained the battles of Sinsheim, Ladenburg, Ennheim, Muthausen, and Turckheim, and obliged the Imperial army, which consisted of 70,000 men, to re-pass the Rhine. By this campaign the viscount Turenne acquired immortal honour: he passed the Rhine to give battle to general Montecuculi, whom he followed as far as Saspach; but mounting upon an eminence, to discover the enemy's camp, he was killed by a cannon-ball, the 27th of July, aged 64.

*TOURNAY, siege of. At the beginning of the campaign in the year 1709, the allies commanded by the duke of Marlborough and prince Eugene, proposed to give battle to the French army commanded by marshal de Villars; but the marshal retired on their approach, and unadvisedly weakened the garrison of Tournay to strengthen his own army; it was now judged necessary to besiege that city, therefore, on the 27th day of June it was invested. The trenches were opened between the seventh and eighth days of July, and the siege prosecuted with so much vigor, that on the twenty-eighth the garrison demanded to capitulate for the town, which they surrendered on the thirtieth. The next day the marquis de Surville, the French governor, was entertained at dinner by prince Eugene; and in the afternoon retired into the citadel, which his garrison had entered: the number of about four thousand men; but a great number of their men concealed themselves in the town, and two captains, four lieutenants, with about one hundred and fifty men, came to the duke of Marlborough's camp. At the same time, the French sick and wounded, to the number of eight hundred, marched out to be conducted to Doway; and the earl of Albemarle who was appointed governor of Tournay, took possession of the town. The time agreed for evacuating the same expiring that night, the allies began to work again on the approaches to the citadel.

del. On the first of August, the French first began the act of hostility, and fired from the citadel with cannon, and small shot, upon count Lottin's trenches and batteries; from whence they were immediately answered, and the fire continued very hot on both sides the whole night. The same day, dispositions were made for a second attack; the new lines of circumvallation about the citadel almost finished, and orders given for levelling those about the town. In the mean time, the marquis of Surville having proposed to the confederate generals, the appointing of two persons to treat about the surrender of the citadel, the princes of Savoy and Marlborough named the sieur de Lalo, a brigadier in the British troops, and the marquis de Sarville chose the marquis de Ravignan, a brigadier in the French service, who having conferred together, drew up and subscribed an agreement by which the place was to be surrendered the fifth of September, and the garrison to have all the honours of war. But on this occasion, the French gave a fresh instance of their insincerity, and manifested to the world, that their proposals for delivering up the citadel of Tournay, were but an artifice to gain time, and, if possible, amuse the allies: for the king of France refused to ratify these articles, unless a general cessation of arms in the Netherlands, till the fifth of September, should, at the same time, be agreed on; which the allies rejected. Hereupon the siege was carried on with all possible vigor, and notwithstanding the great difficulties the confederate troops met with in their attacks by reason of the vast numbers of the French mines. On the thirty-first of August the garrison beat the chamade, desiring to capitulate. Hostages being thereupon exchanged on both sides, M. Dolet, and the marquis de Ravignan, both majors general, and four other officers came out of the citadel; and major-general Hondorf, with five officers more on the side of the confederates, were sent in. Dolet and his company were brought to the earl of Albemarle's house, where the duke of Marlborough and the prince of Savoy being met to receive their proposals, they offered to surrender the place, and delivered a project of a capitulation, consisting of eleven articles. When they had made their offers, they were desired to withdraw; and after some consultation, they were called in again, and received for answer from the duke of Marlborough and

the prince of Savoy, that they could allow no other conditions, but that the garrison should surrender themselves prisoners of war. So they returned into the citadel, and about three o'clock in the afternoon the hostilities began again. Their highnesses thought fit to insist on having the garrison prisoners of war, as well for the honour of the arms of the allies, as in return for the French king's having refused to agree to the former capitulation: besides that during the cessations, the advices they had before were confirmed; the French officers owning that they were obliged to surrender for want of provisions. On the tenth of September about break of day, word came that the garrison was at last willing to surrender upon such terms as should be allowed them. Whereupon their highnesses immediately signed the articles of capitulation, by which the garrison retained their swords and baggage, and returned to France, on condition that they served not against the allies, till a like number of officers and soldiers of the allies were returned to the allied army.

TOURNEFORTIA, in botany; a genus of plants; the empalement of the flower is permanent, of one leaf, cut into five small segments at the top. The flower is of one petal, of the globular bell-shape, cut at the brim into five acute points, which spread openly horizontally; it has five awl-shaped stamina the length of the tube, terminated by single summits, and a globose germen supporting a single style the length of the stamina, crowned by a single stigma. The germen afterward becomes a spherical succulent berry, inclosing four oblong oval seeds resting upon the empalement.

TOURNEQUET, in surgery, an instrument made of rollers, compresses, screws, &c. for compressing any wounded part, so as to stop hæmorrhages.

TOWAGE, the hawling or drawing of a ship, barge, &c. by men or beasts, or by another ship or boat, fastened to her, in order to make her enter a port, ascend a river, &c.

TOWER, a tall building, consisting of several stories, usually of a round form, though sometimes square or polygonal.

Towers are built for fortresses, prisons, &c. as the Tower of London, the Tower of the Bastile, &c.

The Tower of London is not only a citadel, to defend and command the city, river, &c. but also a royal palace, where our kings, with their courts have sometimes

times lodged; a royal arsenal, wherein are arms and ammunition for sixty thousand soldiers; a treasury for the jewels and ornaments of the crown; a mint for coining of money; the great archive, wherein are preserved all the ancient records of the courts of Westminster, &c. and the chief prison for state criminals.

The Tower of London was built in 1080, and walled round in 1099.

TOWN, a place inhabited by a considerable number of people, being of a middle size between a city and village.

TOXICODENDRON, Poison-tree, in botany, a tree, the male flowers of which are upon different plants from the female; they have a small empalement, cut into five points at the brim, but have no petals; they have five short stamina, terminated by roundish summits. The female flowers have empalements like the male; they have no stamina, but in the center is situated a roundish germen, supporting three small styles, crowned with globular stigmas. The germen afterwards turns to a berry with one or two cells, inclosing one seed in each.

Mr. Miller enumerates nine species of the poison-tree, all possessed of the same poisonous quality.

TOXICUM, a sort of poison, said to be used by the Indians to their arrows, in order to render wounds made by them incurable.

TRABEATION, in the ancient architecture, the same with entablature. See Entablature.

TRACES of the Brain, among the Cartesians, denotes the impressions which sensible objects make on the fine fibres of the brain, by means of the organs of sense; upon which impressions memory, imagination, &c. are supposed, in a great measure to depend. See Memory, &c.

TRACHELIUM, in botany, a genus of plants, with a funnel fashioned flower divided into five segments at the limb; the fruit is a roundish obtusely trilobous capsule, containing a great number of very minute seeds: it is a native of Italy, and grows naturally in shady woods.

TRACHEOTOMY, in surgery, the name of an operation otherwise called bronchotomy.

TRACT, in geography, an extent of smooth ground, or a portion of the earth's surface.

TRACT, in matters of literature, a small treatise, or written discourse, upon any subject.

TRACTION, the art of drawing,

whereby a thing is brought nearer to the mover.

TRACTRIX, in geometry, a curve otherwise called catenaria.

TRADE, in general, denotes the same with commerce, consisting in buying, selling, and exchanging of commodities, bills, money, &c. The first notions of trade arose from the light of nature. One family no sooner found that they could not live without the assistance of another, but they established a trade by way of barter. As the nations encreased, markets were every where established for the same purpose, where a sheep was exchanged for a sack of corn, or an ox for some other necessaries of life. This introduced the use of weights and measures; but trade never became an art, till the invention of spinning and weaving, whose manufactures introduced a variety of dealing.

Trade, in the next place, regulated the value of all kinds of commodities by a common measure or standard, from the inconveniencies of barter, and a certain equivalent, called money, was agreed upon for all sorts of goods. Formerly, in England, leather money was used; and the Africans still use cowries, or white speckled shells, called black-a-moor's-teeth. But, in process of time, silver and gold being found most convenient to make money of, they are become the common standard of all commodities; which are purchased with more or less money in proportion to the plenty and scarcity of the goods brought to market; from hence we date the terms of dearth or cheapness.

At the introduction of metal money, the merchant adjusted its value only by weight, but this being found inconvenient, its weight or value was ascertained by a stamp or mark, which is what we call coin. Money not only serves commodiously to settle the price of all goods, but it serves to pay for labour, to purchase houses, lands, &c. so that from hence arises the notion of riches. This has been the great foundation of commerce; because as many nations want this depository of wealth, which seems to be confined to certain countries; and as these nations, without it, must have remained poor, had they not some method of acquiring this treasure; it has caused an intercourse between those nations; so that what was called trade, so long as confined between people of the same country, is properly stiled commerce, when it is carried into so large an extent.

Commerce could not be established without shipping. At least, those nations who have applied themselves to that adventurous commerce, have in all ages exceeded those in riches, power, and necessities of life, who enjoyed a better climate, soil, or situation. Nothing could be so great a spur to industry, as the invention of trade. When a man knows that his labour shall be crowned with plenty, he proceeds with courage, vigour, and activity; he is daily either inventing new schemes, or carrying arts, already known, to the utmost perfection. In which view, trade is the great principle of science, both theoretical and practical.

Again, it is to trade that we ascribe the beginning of civility and society: and when this had improved men's circumstances, the desire of keeping, and quietly enjoying the property so obtained, introduced and established equal, limited, and legal governments; and living under, and the being protected by such governments, is properly styled liberty; which, therefore, is not only highly consistent with, but, in some measure, essentially necessary to trade. But what has at all times recommended commerce beyond all other acquisitions, is the power, or ability of independency, which it gives to that nation where it flourishes most. There is no maxim more incontestable in all ages, than that the people who prevail at sea, will in the end, prevail on shore. No maritime power was ever ruined by a land war, till her power was first broken at sea, or she lost the power of the sea. Therefore, if liberty, property, and equal government, a flourishing state of learning, perfection in arts and sciences, public magnificence, private abundance, and a capacity of defending and preserving these blessings against all invaders, be certain and incontestable benefits, they are such as commerce alone, is able to give to any people or nation.

TRADE-WINDS, certain regular winds at sea, blowing either constantly the same way, or alternately this way and that; thus called from their great use in navigation, and the Indian commerce. The trade winds are of different kinds, some blowing three or six months of the year one way, and then the like space of time the opposite way; very common in the Indian seas, and called monsoons. Others blow constantly the same way; such is that general wind be-

tween the tropics, which, off at sea, is found to blow all day long from east to west.—For the phenomena of each, with their physical causes, see *Wind*.

TRADESCANTIA, in botany, a genus of plants, the flower of which consists of three orbiculated, plane, and very patent petals: and its fruit is an oval trilobular capsule, containing a few angular seeds.

TRADITION, among ecclesiastical writers, denotes certain regulations regarding the rites, ceremonies, &c. of religion, which we suppose to have been handed down from the days of the apostles, to the present time. Tradition is distinguished into written, of which there are some traces in the writings of the ancient fathers; and unwritten, of which no mention is made in the writers of the first ages of Christianity.

TRAGACANTH, in botany, a genus of plants; the empalement of the flower is indented in five parts, the lower segments being the shortest. The flower is of the butterfly kind; the standard is long, erect, indented at the point; the borders are reflexed. The wings are shorter than the standard. The keel is of the same length with the wings, and is indented; it has ten stamina, nine are joined and one is separated, terminated by roundish summits, and a sharp taper germen, supporting an oval-shaped style, crowned by an obtuse stigma. The germen afterward becomes a short swelling pod, having two longitudinal rolls, inclosing kidney-shaped seeds. There are four species of this plant enumerated by Mr. Miller: the first grow naturally on the sea-shore about Marseilles, and in Italy; this has a thick, short, ligneous stalk, which branches out greatly on every side. The young branches are woolly, closely garnished with winged leaves, whose foot-stalks end in acute thorns. The lobes are small, oval, obtuse and of a silvery colour. The flowers are large, white, and shaped like a butterfly; they are produced in clusters at the end of the branches, and are succeeded by short pods, having two longitudinal cells, containing two or three kidney-shaped seeds, which seldom ripen in England.

Tragacanth has the same virtues with gum-arabic, but in a greater degree.

TRAGEA, in pharmacy, an aromatic powder, grossly beaten and mixed with sugar, taken by way of carminative.

TRAGEDY, a dramatic poem, representing some signal action performed by illustrious persons, and which has frequently a fatal issue, or conclusion. Aristotle, more scientifically, defines tragedy, the imitation of one grave and entire action, of a just length, and which without the assistance of narration, by raising of terror and compassion, refines and purges our passions. This definition has given the critics some perplexity; and Corneille declares he cannot reconcile Aristotle with himself: the instances Aristotle cites, he thinks, ruin his own definition; he even denies the purging our passions to be the end of tragedy. Our English authors are more favourable to the definition; by the purging our passions, they understand not the extirpating them, but the reducing them to just bounds; for by shewing the miseries that attend a subjection to them, it teaches us to watch them more narrowly; and by seeing the great misfortunes of others, it lessens the sense of our own. Tragedy, in its original, Mr. Hedelin observes, was only a hymn sung in honour of Bacchus, by several persons, who together, made a chorus of music, with dances and instruments. As this was long, and might fatigue the singers, as well as tire the audience, they divided the singing of the chorus into several parts, and had certain recitations in the intervals. Accordingly Thespis first introduced a person upon the stage with this view. Æschylus, finding one person insufficient, introduced a second, to entertain the audience more agreeably, by a kind of dialogue: he also clothed his persons more decently, and first put on them the buskin. The persons who made these recitations on the scene, were called actors; so that tragedy was at first without actors. And what they thus rehearsed, being things added to the singing of the chorus, of which they were no necessary part, were called episodes. Sophocles found that two persons were not enough for the variety of incidents, and accordingly introduced a third: and here the Greeks seem to have stopped; at least, it is very rare that they introduced four speakers in the same scene. Tragedy and comedy were, at first, confounded with each other, but were afterwards separated; and the poets applied themselves to the cultivating of tragedy, neglecting comedy. When tragedy was got into a better form, they changed the

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measure of its verse, and endeavoured to bring the action within the compass of a day, or of a revolution of the sun. The English received the first plan of their drama from the French, among whom it had its rise towards the end of Charles V. under the title of Chant-royal, which consisted of pieces in verse, composed in honour of the Virgin, or some of the saints, and sung on the stage: they were called by the title of Chant royal, because the subject was given by the king of the year, or the person who had borne away the prize the year preceding. The humour of these pieces ran wonderfully among the people, insomuch that in a little time there were formed several societies, who began to vie with each other: one of these, to engage the town from the rest, began to intermix various incidents or episodes, which they distributed into acts, scenes, and as many different persons as were necessary for the representation. Their first essay was in the Bourg St. Mawre, and their subject the passion of our Saviour. The provost of Paris prohibiting their continuing it, they made application to court; and to render it the more favourable to them, elected themselves into a friary or fraternity, under the title of Brothers of the Passion: which title has given some occasion to suspect them to have been an order of religious.

The king, on seeing and approving some of their pieces, granted them letters of establishment, in 1402; upon which they built a theatre, and for an age and a half acted none but grave pieces, which they called moralities; till the people growing weary of them, they began to intermix farces, or interludes, from profane subjects. This mixture of farce of religion displeasing many, they were re-established by an arrest of parliament, in 1548, on condition of their acting none but proper, lawful, and decent subjects, without intermeddling with any of the mysteries of religion; and thus were the Brothers of the Passion despoiled of their religious character; upon which they mounted the stage no more in person, but brought up a new set of comedians, who acted under their direction.

Thus was the drama established, and on this foundation arrived in England. In process of time, as it was improved, it became divided into two branches, agreeable to the practice of the ancients, and the nature of things, viz. into tragedy

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gedy and comedy, properly so called; and this last again was sub-divided into pure comedy and farce.

TRAGI-COMEDY, a dramatic piece partaking of the nature both of tragedy and comedy, the event of which is not bloody or unhappy, and wherein is admitted a mixture of less serious characters. The foundation of tragi-comedy is certainly bad; for endeavouring to make us laugh and cry by turns, it endeavours at contrary motions, which the heart can never undergo; every thing that disposes for the one, indisposing for the other: for which reason it is at present, with great justice, disused.

TRAGOPOGON, Goats Beard, in botany, a genus of plants; the common empalement of the flower is single, composed of eight acute pointed leaves, which are alternately large, joined at their base. The flower is composed of many hermaphrodite florets, which are uniform, of one petal, stretched out like a tongue, indented at their points in five parts, and lie over each other like the scales of fish; these have each five short hair like stamina, terminated by cylindrical summits, and an oblong germen, situated under the floret, supporting a slender style the length of the stamina, crowned by two revolving stigmas. The empalement of the flower afterwards swells to a belly, inclosing many oblong, angular, rough seeds, slender at both ends, crowned by a feathery down.

There are six species of this plant, the first growing naturally in the meadows of Austria and Germany; this is very different from the second, which grows naturally in England; for the seeds of both have been sown several years in the same bed of earth, and have always been found to retain a difference.

TRAGUS, in anatomy, one of the protuberances of the auricle, or external ear, called also hircus, because usually hairy. The tragus is that protuberance next the temple: that on the opposite side, to which the soft lobe of the ear is annexed, is called the antitragus. See *Ears*.

TRAJAN COLUMN, a famous historical column erected in Rome, in honour of the emperor Trajan. It is of the Tuscan order, though something irregular; its height is eight diameters, and its pedestal Corinthian: it was built in a large square there, called Forum Romanum. Its base consists of twelve stones, of an enormous size, and it is raised on a

soole, or foot of eight steps; within side is a stair-case, illuminated with forty-four windows. It is 140 feet high, which is thirty-five short of the Antonine column, but the workmanship of the former is much more valued. It is adorned from top to bottom with basso relievos representing the great actions of that emperor against the Dace.

TRAJECTORY of a Comet, its path or orbit, or the line it describes in its motion. See *Comet*.

TRAIL-BOARD, in a ship, a carved board on each side of her beak, which reaches from the main-stem to the figure, or the brackets.

TRAIN, the attendance of a great person, or the trail of a gown, or robe of state. In falconry, it denotes the tail of an hawk.

TRAIN, is likewise used for the number of beats which a watch makes in an hour, or any other certain time.

TRAIN, is also used for a line of gunpowder, laid to give fire to a quantity thereof, in order to do execution by blowing up earth, works, buildings, &c.

TRAIN, or **TRAIL OF ARTILLERY**, includes the great guns, and other pieces of ordnance belonging to an army in the field. See *Cannon*.

TRAIN OIL, the oil procured from the blubber of a whale by boiling.

TRAIN-BANDS, or **TRAINED-BANDS**, a name given to the militia of England.

TRAINING, or **TRACING**, in mineralogy, a term used by the miners to express the tracing up the mineral appearances on the surface of the earth to their head, or original place, and there finding a mine of the metal they contain.

TRAITOR, or **TRAYTOR**, one guilty of treason.

TRAMBLING of Tin Ore, among miners, the washing it very clean, which is done in a shovel, and in a frame of boards. See *Tin*.

TRAMEL, an instrument, or device, sometimes of leather, more usually of rope, fitted to a horse's legs, to regulate his motions, and form him to an amble. It is also taken in many places for an iron moveable instrument in chimnies to hang pots over the fire.

TRAMEL-NET, a long net wherewith to take fowl by night in champaign countries, resembling the net used for the low bell, both in shape, size, and meshes.

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To use it, they spread it on the ground, so as the nether or farther end fitted with small plumbets, may lie loose thereon; then the other part being borne up by men placed at the fore-ends, it is thus trailed along the ground. At each side are carried great blazing lights, by which the birds are raised, and as they rise under the net they are taken.

TRIANGLE, in heraldry, the diminutive of a fess, commonly called a bar.

TRANSACTION, in the civil law, an accommodation of some business, or dispute between two parties, by a mutual and voluntary agreement between them. See *Accommodation*.

Philosophical TRANSACTIONS, a kind of journal of the principal things that come before the Royal Society of London. See *Society*.

TRANSCENDANT, or **TRANSCENDENTAL**, something raised or elevated beyond other things; or which passes and transcends the nature and circumstances of other inferior beings, so as not to be intimately and essentially included under them.

TRANSCENDENTAL Quantities, among geometricians, are indeterminate ones; or such as cannot be expressed, or fixed to any constant equation.—Such is the transcendental curve, or the like.

TRANSCENDENTAL Curve, in the higher geometry, is such a one as cannot be defined by any algebraic equation; or which, when expressed by an equation, one of the terms thereof is a variable quantity. These curves are the same with what Des Cartes, and, after his example, several others call mechanical curves, and which they would have excluded out of geometry; but Sir Isaac Newton and M. Leibnitz are of another sentiment; for, in effect, in the construction of geometrical problems, one curve is not to be preferred to another, as it is defined by a more simple equation, but as it is more easily described than that other. And some of these transcendental, or mechanical, curves are found of greater use than all the algebraical ones together, except the circle.

TRANSCOLATION, in pharmacy, the same with filtration, or percolation. See *Filtration*.

TRANSCRIPT, a copy of any original writing, particularly that of an act, or instrument, inserted in the body of another.

TRANSFER, in commerce, &c. an

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act whereby a person surrenders his right, interest, or property in any thing moveable or immoveable to another. The term transfer is chiefly used for the assigning and making over shares in the stocks, or public funds, to such as purchase them of the proprietors.

TRANSFORMATION, in general, a change of form, or the assuming a new form different from a former one. The chemists have been a long time seeking the transformation of metals; that is, their transmutation, or the manner of changing them into gold. See *Transmutation*.

TRANSFUSION, the act of pouring a liquor out of one vessel into another.

TRANSGRESSION, an offence against some law, or a breach or violation thereof.

TRANSIT, in astronomy, the passage of any planet just by, or over a fixed star, or the sun, and of the moon in particular, covering or moving over any planet.

TRANSITION, in music, is when a greater note is broken into a less, to soften the roughness of a leap by a gradual passage to the next note following; whence it is commonly called the breaking of a note.

TRANSITION, in rhetoric, is of two sorts. The first is when a speech is introduced abruptly, without express notice given of it; as when Milton gives an account of our first ancestors evening devotions.

Both turned, and under open sky ador'd
The God that made both air, sky, earth
and heaven—

—Thou also mad'st the night,
Maker Omnipotent, and thou the day!

The second sort of transition is, when a writer suddenly leaves the subject he is upon, and passes unto another, from which it seems different at first view, but has a relation and connection with it, and serves to illustrate and enlarge it.

TRANSITIVE, in grammar, an epithet applied to such verbs as signify an action which passes from the subject that does it, to or upon another subject which receives it. Under the head of verbs transitive, come what we usually call verbs, active and passive; other verbs, whose action does not pass out of themselves, are called neutrals, and by some grammarians, intransitives.

TRANSLATION, the act of transferring or removing a thing from one place to another; we say the translation of a

bishop's see, a council, a seat of justice, &c.

TRANSLATION is also used for the version of a book, a writing out of one language into another.

TRANSMARINE, something that comes from, or belongs to the parts beyond sea.

TRANSMIGRATION, the removal or translation of a whole people into another country, by the power of a conqueror.

TRANSMIGRATION, is particularly used for the passage of a soul out of one body into another, being the same with what we otherwise call metempsychosis.

TRANSMISSION, in optics, &c. the act of a transparent body passing the rays of light through its substance, or suffering them to pass; in which sense the word stands opposed to reflection. Transmission is also frequently used in the same sense with reflection, by which most bodies, in transmitting the rays, do also refract them. The rays of light, Sir Isaac Newton observes, are subject to fits of easy transmission and reflection.

TRANSMUTATION, the act of transforming, or changing one nature into another. Nature, Sir Isaac Newton observes, seems delighted with transmutations: he goes on to enumerate several kinds of natural transmutations; gross bodies, and light, he suspects, may be mutually transmuted into each other; and adds, that all bodies receive their active force from the particles of light which enter their composition. For all fixed bodies, when well heated, emit light as long as they continue so; and again, light intermingles itself, and inheres in bodies, as often as its rays fall on the solid particles of those bodies. Again, water, which is a fluid, volatile, tasteless salt, is by heat transmuted into a vapour, which is a kind of air, and by cold, into ice, which is a cold transparent brittle stone, easily dissolvable, and this stone is convertible again into water by heat, as vapour is by cold. Earth, by heat, becomes fire; and by cold is converted into earth again: dense bodies, by fermentation, are rarified into various kinds of air; and that air, by fermentation also, and sometimes without, reverts into gross bodies. Quicksilver sometimes puts on the form of a fluid metal, sometimes it appears in shape of a pellucid fragile salt, called sublimate; sometimes of a pellucid volatile white tasteless earth, called mercurius dulcis; by distillation it be-

comes vapour, and by agitation in vacuum it shines like fire, &c. All bodies, beasts, fishes, insects, plants, &c. with all their various parts, grow and increase out of water, and aqueous and saline tinctures; and by putrefaction, all of them revert into water or an aqueous liquor again. Farther, water exposed a while to the open air puts on a tincture, which, in process of time, has a sediment and a spirit, and before putrefaction, yields nourishment both for animals and vegetables.

TRANSMUTATION, in alchemy, denotes the art of changing or exalting imperfect metals into gold or silver. This is also called the grand operation, and, they say, is to be effected with the philosopher's stone.

Whether or no metals may be transmuted into one another, is a point strongly disputed among philosophers, the alchemists strenuously asserting the affirmative.

TRANSMUTATION, in geometry, denotes the reduction or change of one figure or body into another of the same area or solidity, but of a different form; as a triangle into a square, a pyramid into a parallelopiped, &c. In the higher geometry, transmutation is used for the converting a figure into another of the same kind and order, whose respective parts rise to the same dimensions in an equation, admit of the same tangents, &c. If a rectilinear figure be transmuted into another, it is sufficient that the intersections of the lines which compose it be transferred, and the lines drawn through the same in the new figure. If the figure to be transmuted be curvilinear, the points, tangents, and other right lines by means of which the curve line is to be defined, must be transferred.

TRANSOM, among mathematicians, the vane of a cross-staff, or a wooden number fixed across, with a square whereon it slides, &c.

TRANSOM, in a ship, a piece of timber, which lies athwart the stern, between the two fashion-pieces, directly under the gun-room port.

TRANSON, among builders, the piece that is framed across a double-light window.

TRANSPARENCY, in physics, a quality in certain bodies, whereby they give passage to the rays of light. The transparency of natural bodies, as glass, water, air, &c. some have imputed to the great number and size of the pores

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or interstices between the particles of these bodies: but this account is exceedingly defective; for the most solid and opaque body in nature, we know, contains a great deal more pores than it does matter; a great deal more than is necessary for the passage of so infinitely fine and subtle a body as light.

TRANSPIRATION, the insensible, or almost insensible passage of an excrementitious matter through the pores of the skin, called also perspiration.

TRANSPANTATION, in agriculture and gardening, the act of removing trees or plants from the places where they were sowed, or raised, and planting them in others. See *Planting*.

TRANSPORTATION, the act of punishment, or more properly an alleviation or commutation of punishment, for criminals convicted of felony, who for the first offence, unless it be an extraordinary one, are generally transported to the plantations, there to bear hard labour for a term of years; within which, if they return, they are executed without farther trial, except to prove the identity of their persons.

TRANSPOSITION, in algebra, the bringing any term of an equation over to the other side.

TRANSPOSITION, in grammar, a disturbing or dislocating of the words in a discourse, or a changing of their natural order of construction, to please the ear by rendering the contexture more easy, smooth, and harmonious. A transposition which renders the sense perplexed is vicious. The constitution of the ancient languages being much more artful than that of the modern ones, allowed of much greater and more frequent transpositions. The English, French, &c. scarce ever allowed of them but in oratory and poetry, in which cases they serve to give a force and energy to the discourse or the verse, and to prevent their languishing.

TRANSPOSITION, in music, a changing of the notes of a piece of music, or the shifting a song from its former situation, to set it either higher or lower, or in another octave.

TRANSUBSTANTIATION, in theology, the conversion or change of the substance of the bread and wine in the eucharist, into the body and blood of Jesus Christ, which the Romish church hold it wrought by the consecration of the priest. This is a main point in the Romish religion, and is rejected by the

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protestants, the former maintaining the transubstantiation to be real, the latter only figurative; interpreting the text, *hoc est corpus meum*, "This signifies my body." But the council of Trent stood up strenuously for the literal sense of the verb *est*, and say expressly, that in transubstantiation the body and blood of our Lord Jesus Christ are truly, really, and substantially under the species of bread and wine. The controversies about this point are almost innumerable.

TRANSUMPTION, in the schools, a syllogism by concession or agreement, used where a question proposed is transferred to another; with this condition, that the proof of this latter should be admitted for a proof of the former.

TRANSVERSALIS, in anatomy, a name given to several muscles, &c. in respect to their situation, progress, &c.

TRANSVERSE, something that goes across another from corner to corner: thus bends and bars, in heraldry, are transverse pieces, or bearings: the diagonals of a parallelogram or a square, are transverse lines: lines which make intersections with perpendiculars, are also called oblique or transverse lines.

TRANSVERSE AXIS, or **DIAMETER**, called also the first or principal axis.—The transverse axis of an ellipsis is the longer axis, or that which traverses it lengthwise, in contradistinction from the conjugate one.

TRAPEZIUM, in geometry, a plane figure contained under four unequal right lines. 1. Any three sides of a trapezium, taken together, are greater than the third. 2. The two diagonals of any trapezium, divide it into four proportional triangles. 3. If two sides of a trapezium be parallel, the rectangle under the aggregate of the parallel sides, and one half their distance is equal to that trapezium. 4. If a parallelogram circumscribes a trapezium, so that one of the sides of the parallelogram be parallel to a diagonal of the trapezium, that parallelogram will be the double of the trapezium. 5. If any trapezium has two of its opposite angles, each a right angle, and a diagonal be drawn joining these angles; and if from the other two angles be drawn two perpendiculars to that diagonal, the distances from the feet of these perpendiculars to those right angles, respectively taken, will be equal. 6. If the sides of a trapezium be each bisected, and the points of bisection be joined by four right lines, these lines will form a parallelogram, which will be
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one half of the trapezium. 7. If the diagonals of a trapezium be bisected, and a right line joins these points, the aggregate of the squares of the sides is equal to the aggregate of the squares of the diagonals, together with four times of the square of the right line joining the point of bisection. 8. In any trapezium, the aggregate of the diagonals is less than the aggregate of four right lines drawn from any point, except the intersection of the diagonals, within the figure.

TRAPEZOID, a solid irregular figure, having four sides not parallel to one another.

TRAVERSE, or **TRANSVERSE**, in general, denotes something that goes athwart another; that is, crosses and cuts it obliquely.

Hence, to traverse a piece of ordnance, among gunners, signifies to turn or point it which way one pleases, upon the platform.

In fortification, traverse denotes a trench with a little parapet, or bank of earth, thrown perpendicularly across the moat, or other work, to prevent the enemy's cannon from raking it. These traverses may be from twelve to eighteen feet, in order to be cannon proof, and their height about six or seven feet, or more, if the place be exposed to any eminence. And to preserve a communication, a passage of about five or six feet wide must be left at one end of the traverse. If any part of a work, thus shut in by one or more traverses, is likely to be defended by the musketry, it will be proper to add to the traverses one or more foot-banks within the defence, for the troops to mount on, when they want to fire over the traverse.

TRAVERSE, in navigation, is when a ship, upon the shifting of winds, sails upon several courses, in any given space of time. To resolve a traverse, is so to order and compound the several courses and distances obtained by the log and compass, that the mariner may know, at all times, the place the ship is in, and be able to determine how far, and upon what course he must sail to gain his intended port.

TRAVERSE, in law, denotes the denial of some matter of fact alledged to be done in a declaration, or pleadings: upon which the other side coming and maintaining that it was done, issue is joined for the cause to proceed to trial.

TRAVERSE of an Indictment, or *Presentment*, the contradicting or denying some

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chief point of it, and taking issue thereon.

TRAVERSE of an Office, the proving that an inquisition made by lands or goods, is defective and untruly made.

TRAVERSE is sometimes also used, in heraldry, for a partition of an escutcheon, which is blazoned *parti per pale traverse*, argent and gules.

TRAVESTY, or **TRAVESTI**, a French term, derived from the verb *travestir*, to disguise one's self, or to appear in masquerade: and hence, travesty is applied to the disguising of an author, or the translating him into a style and manner different from his own, by which means it becomes difficult to know him.

TRAUMATICS, the same with vulnerary medicines. See *Vulnerary*.

TREACLE, *Thiaccia*, in pharmacy. Some also give the name treacle to melasses; and in this sense it is that Dr. Shaw, in his Essay on Distillery, has endeavoured to bring into use several sorts of treacles, which might be made at home, and would serve very conveniently for the distillation of spirits, or the making potable liquors. These are the inspissated juices or decoctions of vegetables; such as the sweet juice of the birch, or sycamore, procured by tapping or piercing the trees in spring, and the common wort made from malt, or from other vegetable substances treated in the same manner. These liquors are severally to be boiled down in a copper till they begin to inspissate, and then to be poured into a *balneum mariae*, when the remainder of the evaporation may be finished without burning the inspissated juices: thus prepared it may be at any time reduced to the state of wort, only by adding a sufficient quantity of warm water.

TREASON, in general, signifies betraying; but is more particularly used for the act or crime of infidelity to one's lawful sovereign. Treason is divided, by lawyers, into high treason and petty treason. The first of these is an offence committed against the security of the king or kingdom; as to compass, or imagine, the death of the king, queen, or their eldest son and heir; or in case a person does violate or deslower the king's wife, or his eldest daughter unmarried, or the wife of the king's eldest son; or if he levy war against the king within his kingdom, or adhere to his enemies, give them aid or comfort within the realm, or elsewhere; or if he counterfeit the king's great or privy seal, or his money, or bring false money

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ney into the kingdom, like to what we have here, and utter the same; if he kill the chancellor, treasurer, justices of either bench, justices of assize, or of oyer and terminer, sitting in judgment and representing the person of the king, in the execution of his office: all these cases are deemed treason by 25. Ed. III. c. 2. which statute is made the only standard of high-treason; and 1. Mary c. 1. takes away the power of the king and parliament to adjudge any thing else to be high-treason but what is declared to be such therein: it is true, temporary statutes of late times enacted, have made some other offences treason, as relating to papists and the protestant succession.

Petty treason, is where a servant kills his master, a wife her husband, or a secular or religious person kills his prelate or superior, to whom he owes faith and obedience, and aiders and abettors as well as procurers, are within the act. However, so strictly is the statute construed, that no case not expressly mentioned therein is punishable by it: hence if a son kill his father, he shall not be tried for petty treason, except he served his father for wages, in which case he is to be indicted under the name of a servant.

Petty treason implies the highest degree of murder, and occasions the forfeiture of lands by escheat to the lord of the fee: and the further punishment of the criminal is to be hanged, drawn, and quartered for it, and a woman burnt.

TREASURE, in general, a store or stock of money in reserve.

TREASURE-TROVE, in law, is where any treasure is found buried in the earth, but not lying on the ground, and no man knows to whom it belongs: this, in England, belongs to the king, and to conceal it is punishable by fine and imprisonment.

TREASURER, an officer to whom the treasure of a prince, or corporation is committed to be kept, and duly disposed of in payment of officers, and other expenses.

Lord High TREASURER of England, the third great officer of the crown, under whose charge and government is all the king's revenue kept in the exchequer. He receives the office by the delivery of a white staff to him from the king, and holds it during the king's pleasure: anciently he received it by delivery of the golden keys of the treasury. He has the check of all the officers any way employed in collecting imposts, customs, tributes,

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or other revenues of the crown. He has the gift of all the customers, comptrollers, and searchers of places in all the ports of London, and the nomination of the escheators in every county. He alone, or others in commission with him, letteth leases of all the crown lands, gives warrants to certain persons of quality to have their wine custom free, &c.

TREASURER of the Household, an officer, who, in the absence of the lord steward, has power, with the comptroller and other officers of the Green-cloth, and the steward of the Marshalsea, to hear and determine treasons, felonies, and other crimes committed within the king's palace.

TREASURER of the Navy, an officer who receives money out of the exchequer, by warrant from the lord high treasurer, or the lords commissioners executing that place, and pays all charges of the navy by warrant from the principal officers of the navy.

TREASURY, the place wherein the revenues of a prince are received, preserved, and disbursed.

In England, the Treasury is part of the Exchequer, by some called the Lower Exchequer.

Lords of the TREASURY.—In lieu of one single director and administrator of his majesty's revenues, under the title of lord high treasurer, it is frequently thought proper to put that office in commission, that is, to appoint several persons to discharge it with equal authority, under the title of Lords Commissioners of the Treasury, which is the case at present, and lord North is the first lord of the treasury.

TREATISE, a set discourse in writing on any subject. A treatise is supposed more express, formal, and methodical than an essay, but less so than a system.

TREATY, a covenant between two or more nations; or the several articles or conditions stipulated and agreed upon between sovereign powers.

TREBLE, in music, the highest or acutest of the four parts in symphony, or that which is heard the clearest and shrillest in a concert.

TREE, the first and largest of the vegetable kind, consisting of a single trunk, out of which spring forth branches and leaves. Standard trees are such as naturally rise to a great height, and are not topped. For the choice of trees of this kind to be transplanted out of a nursery,

Quintiney

Quintiney recommends us to such as are straight, six feet high at least, and five or six inches thick at bottom, and three or four at top; the bark pretty smooth and shining, as a token of their youth, and of the good soil they grew in. Dwarf-trees are such as are kept low, and never suffered to have above half a foot of stem.

Fruit TREES. See *Fruit*.

For the planting, pruning, felling, grafting, &c. of trees, see the articles *planting*, *pruning*.

TREFOIL, in botany, a genus of plants, the flower of which has a tubulous permanent empalement of one leaf: it is of the butterfly kind, drying in the empalement. The standard is reflexed, the wings are shorter than the standard, and the keel is shorter than the wings; it has ten stamina, nine are joined, and one is separate, terminated by single summits; and an almost oval germin supporting an awl-shaped style, crowned by a single stigma. The germin afterwards becomes a short pod with one valve, containing a few roundish seeds.

Mr. Miller enumerates twelve different species of trefoil, the first of which is well known in England by the name of red clover. See *Clover*.

When the plants come up, they require no other care than to keep them clean from weeds, and thin them where they are too close.

TRENCHES, in fortification; ditches cut by the besiegers, that they may approach more securely to the place attacked: whence they are also called lines of approach. The tail of the trench is the place where it was begun, and its head is the place where it ends.

TREPAN, in surgery, an instrument used in trepanning.

TREPANNING, in surgery, a perforation, or opening, made in the bones of the cranium.

* **TRENT**, one of the largest rivers in England, rising in the Moorland of Staffordshire, and runs S. W. by Newcastle-under-line, and afterwards dividing the county in two parts, runs to Burton, then to Nottingham and Newark, and so continuing its course due north to Gainsborough on the confines of Lincolnshire, it joins several rivers, and falls into the Humber.

TREPIDATION, in medicine, the same with tremor. See *Tremor*.

TRESPASS, in law, any transgression of the law under treason, felony, or imprisonment of treason.

TRESPASS, however, is commonly used either for that wrong or damage which is done to the king in his forest, or by one private man to another.

TRESSURE, in heraldry, a distinctive of an orle, usually held to be half the breadth thereof.

TRET, in commerce, an allowance made for the waste, or the dirt, that may be mixed with any commodity, which is always four pounds in every one hundred and four pounds weight.

TRIA, PRIMA, among chemists, the three hypostatical principles, viz. salt, sulphur, and mercury; of which they hold all bodies to be primarily made, and into which they are all held resolvable by fire.

TRIAL, in law, the examination of a cause, civil or criminal, according to the laws of the land, before a proper judge: or, it is the manner and order observed in the hearing and determining of causes.

There are divers kinds of trials; as those of matters of fact, which must be tried by a jury; matters of law, which are only triable by the courts; and matters of record, which are to be tried by the records themselves. The most general rule has been, that the jurymen on a trial shall be chosen out of the town or precinct, &c. in which the matter of fact is alledged, or the nearest thereto, for the better cognizance of the matter, and not to leave things to be tried in foreign countries, where the jury are strangers to the whole matter. Where any trial is for murder, it must be in the county wherein the fact was committed; but if the assault be in one county, and the person assaulted happens to die in another county, the indictment may be found by a jury of the county where the party died: and by special commission, when a person is indicted in one county, he may be tried in another. In all criminal cases the custom is to ask the prisoner how he will be tried, which was formerly a very significant question, though it is not so now, because antiently there were trials by combat, by ordeal, and by jury; and when the prisoner answered, by God and his country, it appeared he made choice to be tried by a jury; which is the only way now used for the trial of criminals.

The method of proceeding in criminal cases is this: first the bill of indictment against the offenders is prepared, and the prosecutor and his witness attend with it on the grand jury, and there give in their evidence; which being done, the

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grand inquest either find the bill of indictment, or bring it in ignoramus; and if the bill be found, the prisoner is brought to the bar of the court, and the clerk of the arraignment calling him by his name, desires him to hold up his hand, saying, "Thou art indicted by the name of —, for such a felony, &c. setting forth the crime laid in the indictment. How sayest thou, art thou guilty of this felony whereof thou art indicted, or not guilty?" To which the prisoner answering, "Not guilty," the clerk says, "Culprit, how wilt thou be tried?" whereupon the defendant answers, "By God and my country;" which plea of the prisoner the clerk records, and then the pannel of the petty-jury is called over.

After the jury are sworn, and the indictment is read over to them, and they are charged, the evidences on both sides, for and against the prisoner, are called, sworn, and examined in open court; after which the jury bring in their verdict; and if they find the prisoner guilty their verdict is recorded, and the prisoner is taken from the bar: but if they bring him in not guilty, the prisoner is bid to fall down on his knees, &c. On the prisoner's being brought in guilty, proclamation is made for all persons to keep silence, upon which the prisoner is again brought to the bar, and the verdict repeated: after which sentence is passed on him, and an order or warrant is made for his execution.

The methods of trial, in our civil courts, are as follows: The declaration is first drawn for the plaintiff, and when the appearance of the defendant is entered, it has been usual to deliver it with an imparlance to the defendant's attorney: and the term following rule is to be given with the secondary for the defendant to plead by such a day, or else the plaintiff is to have judgment: and the defendant having pleaded, a copy of the issue is made by the plaintiff, and delivered to the defendant's attorney, at the same time giving him notice of the trial; in order to which the *venire facias* must be taken out and returned by the sheriff; and likewise the *habeas corpora*, or *distingas*, to bring in the jury; on which the record is made up, and the parties proceed to trial by their council and witnesses, and the jury give in their verdict, &c. But in case the defendant neglects to plead, and suffers it to go by default, on entering such a judgment, writ of inquiry of damages is awarded returnable next term; notice of

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the execution whereof the defendant's attorney is to have, and which being executed, and the damages inserted in a schedule annexed to the writ, a rule is given thereon, and costs are taxed by the prothonotary, &c.

TRIANGLE, in geometry, a figure of three sides and three angles, and is either plane or spherical.

Plane TRIANGLE, that contained under three right lines.

Spherical TRIANGLE, that contained under three arches of a great circle of the sphere.

Of *Plane Triangles* there are several sort, as,

1. A *Right-Angled TRIANGLE*, that which hath one right angle.

2. An obtuse-angled triangle, such as hath one obtuse angle.

3. An acute-angled triangle, that which hath all its angles acute.

4. Any triangle that is not right angled, is called oblique-angled.

5. An equilateral triangle, that which hath all its sides equal to one another.

6. An isosceles triangle, that which hath only two sides equal.

7. A scalenous triangle, that which hath no two sides equal.

In every triangle the sum of all the three angles is equal to two right ones, and the external angle, made by any side produced, is equal to the two internal opposite angles taken together.

In every triangle, as well plane as spherical, the sines of the sides are proportional to the sines of the opposite angles.

The side of an equilateral triangle, inscribed in a circle, is, in power, triple of the radius.

In every right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

Triangles on the same base, and having the same height, that is, between the same parallel lines are equal.

Every triangle is one half of a parallelogram of the same base and height.

The area of any right-lined triangle may be had, by multiplying the base by half the perpendicular height, or the perpendicular height by half the base.

The area of any plane triangle may be had by adding all the three sides together, and taking half the sum, and from that half sum subtracting each side severally, and multiplying that half sum and the remainder continually into one

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another, and extracting the square root of the product.

TRIANGULAR Compasses, such as have three legs, or feet, whereby to take off any triangle at once; much used in the construction of maps, globes, &c.

TRIANGULAR Numbers, a kind of polygonal numbers, being the sums of arithmetical progressions, the difference of whose terms is 1.

Thus of arithmetical progression, 1 2 3 4 5 6, are formed triangular numbers 1 3 6 10 15 21.

TRIANGULAR Canon, the tables of artificial lines, tangents, secants, &c.

TRIANGULAR Quadrant, a sector furnished with a loose piece, whereby to make it an equilateral triangle. The calendar is graduated thereon, with the sun's place, declination, and other useful lines; and by the help of a spring and a plummet, and the divisions graduated on the loose piece, it may be made to serve for a quadrant.

TRIARI, in the Roman militia, a kind of infantry armed with a pike, a shield, a helmet, and a cuirass; thus called because they made the third line of battle.

TRIAS HARMONICA, or the *Harmonical TRIAD*, in music, a compound of three radical sounds, heard all together, two whereof are a fifth and third above the other, which is a fundamental.

TRIBE, in antiquity, a certain quantity or number of persons, when a division is made of a city or people into quarters or districts. The tribes of ancient Rome bore a great resemblance to our wards.

TRIBRACHYS, in ancient poetry, a foot consisting of three syllables, and those all short, as *melius*.

TRIBULUS, caltrop, in botany, a genus of plants, the corolla of which consists of five oblong, obtuse, and patent petals: its fruit is of a roundish figure and aculeated, being composed of five capsules, gibbous on one side, and armed with three or four points on the other, angulated and convergent, and containing numerous seeds, turbinated and oblong.

TRIBUNAL, in general denotes the seat of a judge, called in our courts, bench. The word is Latin, and takes its origin from the seat where the tribune of the Roman people was placed to administer justice. The name tribunal was also given to the place from whence

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the people of ancient Rome were harangued.

TRIBUNE, among the ancient Romans; a magistrate chosen out of the commons, to protect them against the oppressions of the great, and to defend the liberty of the people against the attempts of the senate and consuls. The tribunes of the people were first established in the year of Rome 259. The first design of their creation was to shelter the people from the cruelty of usurers, and to engage them to quit the Aventine mount, whither they had retired in displeasure. Their number, at first, was but two; but the next year, under the consulate of A. Posthumus Aruncinus and Cassius Viscellinus, there were three more added; and this number of five was afterwards increased, by L. Trebonius, to ten. The appellation, tribune, was given them, by reason they were at first chosen out of the tribunes of the army.

Military TRIBUNE, an officer in the Roman army, who commanded in chief over a body of forces, particularly the division of a legion, much the same with our colonel, or the French *major de camp*.

TRIBUNE was also an appellation given to various other officers; as the *tribuni ærarii*, tribunes of the treasury. Tribune of the celeres, the officer who commanded them. *Tribuni fabricarum*, those who had the direction of the making of arms. *Tribuni marinorum*, *tribuni nolanorum*, *tribuni voluptatum*, mentioned in the Theodosian Code, as intendants of the public shows, and other diversions. The title of tribune, *tribunus*, was also given to the chief of each tribe.

TRIBUTARY, one who pays tribute to another, in order to live in peace with him, or share in his protection.

TRIBUTE, a tax or impost which one prince or state is obliged to pay to another, as a token of dependence, or in virtue of a treaty, and as a purchase of peace. The Romans made all the nations they subdued pay them tribute. Mahomet laid it down as a fundamental of all his law, that all the world should pay him tribute. In the states of the Grand Signior, Christian children are taken by way of tribute.

Tribute is sometimes also used for a personal contribution, which princes lay upon their subjects, by way of pole money.

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TRICEPS, in anatomy, the abductor muscle of the thigh, having three heads and as many insertions: the first and second heads of this muscle arise from the os pubis, near the symphondrosis; the third, from the tubercle of the ischium; and it is inserted into the whole spine of the os femoris.

TRICHERIÆ, a genus of fossils, naturally and essentially simple, not inflammable nor soluble in water; being fibrose bodies, not elastic, and composed of straight and continuous filaments. To this genus belongs the gypsum striatum of authors, with several other species.

TRICHESTRUM, in natural history, the name of a genus of fossils, of the class of the selenitæ, but differing extremely in figure and structure from the common kinds. The selenitæ of this genus are composed of filaments scarce any where visibly arranged into plates or scales, but disposed in form of a radiated star, made of a number of disjunct striæ.

TRICHIASIS, in surgery, an inversion of the eyelids, whereby the eye lashes hurt the eyes. According to Heister, this disorder is very difficultly remedied; since it is hardly possible to remove it, so as to prevent its returning, without extirpating the offending hairs; and if these be cut off close, it will be to no purpose, because the rigid stumps of the hairs will irritate the eye even worse than the whole hairs did before. It is a very nice operation alone that can make a cure; here the hairs must be pulled up singly by the roots, and the places of their insertion singly cauterized with a hot broad pointed needle; but this the patient will seldom submit to, and the only remaining method then is, to fill up the sinuses out of which they were extracted with the lapis infernalis. But in this the greatest care must be taken, that no part of that application get into the eye. The easiest method is the touching the cavities, out of which the hairs have been pulled up, with a pencil-brush dipped in a mixture of spirit of sal-armoniac and highly rectified spirit of wine, by which means they will close up, and no more hairs will grow from them.

TRICHILIA, in botany, a genus of plants, whose flower consists of five lanceolated patent petals, with a cylindric tubulose nectarium, cut at the mouth into five indentures; the stamina have no filaments, but consist of ten erect affurgent antheræ: the fruit is a roundish

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almost trigonal capsule, having three cells, each containing a single seed.

TRICHOMANES, in botany, a genus of plants of the fern kind; the visible parts of the fructification consists of a turbinated erect calyx standing singly on the very margin of the leaf, and a setaceous style terminating the capsule.

TRICHOSANTHES, in botany, a genus of plants, whose flowers are male and female, and grow on the same plant; the male flower is monopetalous, and divided into five segments, and contains three very short filaments, topped with cylindrical erect antheræ, joined in a body; the female flower is like the male, and the fruit is long, succulent, and trilocular, containing many obtuse compressed seeds. This genus comprehends the anguina of Micheli.

TRICHOSTEMA, in botany, a genus of plants, whose flower is monopetalous and ringent; the tube is very short; the upper lip is compressed and falcated, and the under one is divided into three parts, the middle one being oblong and smallest: the stamina are four very long filaments, topped with single antheræ; there is no pericarpium, but the cup contains four roundish seeds.

TRICUSPIDES, **VALVÆ**, in anatomy, a name given to the mitral valves, placed at the juncture of the right auricle and ventricle of the heart.

TRIDAX, American starwort, in botany, a genus of plants, whose flowers are compound and radiated, consisting of hermaphrodite florets, which form the disc, and ligulated female corollulæ, which compose the rays; the cup, which is cylindrical and imbricated, contains the seeds, which are oblong and crowned with down.

TRIDENT, an attribute of Neptune, being a kind of sceptre which the painters and poets put into the hands of that god, in form of a spear, or fork, with three teeth; whence the word.

TRIDENT, among mathematicians, is used for a kind of parabola, by which Des Cartes constructed equations of six dimensions.

TRIEDROSTYLA, in natural history, the name of a genus of spars, in the form of trigonal columns, adhering by one end to some solid body, and terminated at the other by a trigonal pyramid. See *Spår*.

TRIENNIAL, an epithet applied chiefly to offices or employments which last for three years.

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TRIENS, in antiquity, a copper money of the value of one third of an as, which on one side bore a Janus's head, and on the other a water-rat. This was the piece of money used to be put in the mouths of the deceased to pay Charon his fare, for their passage into another life.

TRIENTALIS, in botany, a genus of plants, whose flower is stellated and monopetalous; with the corolla divided into seven ovato-lanceolated segments; the stamina consists of seven capillary filaments, inserted into the unguis of the corolla, and topped with single anthers.

TRIGAMY, a third marriage, or the state of a person who has been married three times.

TRIGLYPHS, in architecture, a sort of ornaments repeated at equal intervals in the Doric frieze. Each triglyph consists of two entire gutters, or channels, cut to a right angle, called glyphes, and separated by three interflices, called by Vitruvius, femora, from each other, as well as from two other half channels which are at the sides. The ordinary proportion of triglyphs is to be a module broad, and one and a half high. But this proportion, M. le Clerc observes, sometimes occasions ill-proportioned intercolumniations in porticos; for which reason he chooses to accommodate the proportion of his triglyphs to that of the intercolumns.

TRIGON, a triangle. See *Triangle*.

In astrology, trigon denotes the same with trine. See *Trine*.

TRIGONOMETRY, the art whereby, from any three parts of a triangle, except the three angles (when the triangle is a plane one) the rest are discovered.

Trigonometry is either plane or spherical.

Plane **TRIGONOMETRY**, is the method of solving plane triangles.

TRILLION, in arithmetic, the number of a billion of billions. After billions we reckon by trillions, which makes a class of numeration, and is divided, like the other classes, into three places: thus we say, trillions, tens of trillions, hundreds of trillions, &c.

TRIM of a Ship, her best posture, proportion of ballast, and hanging of her masts, &c. for sailing. To find the trim of a ship, is to find the best way of making her sail swiftly, or how she will sail best. This is done by easing of her masts and shrouds; some ships sailing much better when they are slack, than

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when they are taut or fast: but this depends much upon experience and judgment, and the several trials and observations which the commander and other officers may make abroad.

TRIMMERS, in architecture, pieces of timber framed at right angles to the joints, against the ways for chimneys, and well-holes for stairs.

TRINE, in astrology, the aspect or situation of one star with regard to another, when they are distant 120 degrees: it is noted with this character Δ .

TRINGA, in ornithology, a genus of birds belonging to the order of the scolopaces, the characters of which are these: the beak is of a cylindric figure, obtuse at the extremity, and in length about equal to the toes: the feet have each four toes, and they are connected. To this genus belongs the ruff, the cinclus, the lapwing, the gonwit, the tolk, grey plover, &c.

TRINGLE, in architecture, a name common to several little square members or ornaments, as reglets, listels, and plat-bands.

TRINGLE is more particularly used for a little member fixed exactly over every triglyph, under the plat band of the architrave, from whence the guttae or pendant drops hang down.

TRINITARIANS, those who are orthodox and believe in the Trinity: those who do not believe therein being called Antitrinitarians. Trinitarians also denote an order of religious instituted at Rome in the year 1198, under the pontificate of Innocent III. the founders of which were John de Matha, and Felix de Valois.

TRINITY, *Trinitas*, in theology, the ineffable mystery of three persons in one God, Father, Son, and Holy Spirit. See *God*, &c.

The doctrine of the Trinity, as professed in the Christian church, is as follows: That there is but one God in three distinct persons, Father, Son, and Holy Ghost; *person* signifying the same as *essence*, with a particular manner of subsistence, which the Greek fathers call hypostasis, taking it for the incommunicable property that makes a person. The Father, Son, and Holy Ghost are believed to be three distinct persons in the divine nature, because the scriptures in speaking of these three distinguish them from one another, as we use in common speech to distinguish three several persons. There are many instances to this purpose, particularly

particularly the form of administering the sacrament of baptism, which runs in the name of the Father, the Son, and the Holy Ghost: and that solemn benediction with which St. Paul concludes his second epistle to the Corinthians: "The grace of our Lord Jesus Christ, &c." and the three witnesses in heaven, mentioned by St. John. Each of these three persons are affirmed to be God, because the names, properties, and operations of God are, in the holy scripture, attributed to each of them.

TRINITY SUNDAY, a festival of the Christian church, observed on the Sunday next after Whitsunday, in honour of the holy and undivided Trinity. The observation of this festival was first enjoined in the council of Arles, anno 1260.

TRINITY-HOUSE, a society founded in the year 1515, by Sir Thomas Spert, Knt. commander of the great ship Henry Grace de Dieu, and comptroller of the navy to Henry VIII. for the regulation of seamen, and the convenience of ships and mariners on our coast, and incorporated by the above-mentioned prince, who confirmed to them not only the ancient rights and privileges of the company of mariners of England, but their several possessions at Deptford; which, together with the grants of Queen Elizabeth and king Charles II. were also confirmed by letters patent of the first of James II. in 1685, by the name of "The master, wardens, and assistants of the guild or fraternity of the most glorious and undivided Trinity, and of St. Clement, in the parish of Deptford Stroud, in the county of Kent."

This corporation is governed by a master, four wardens, eight assistants, and eighteen elder brethren; but the inferior members of the fraternity, named younger brethren, are of an unlimited number; for every master, or mate, expert in navigation, may be admitted as such; and these serve as a continual nursery to supply the vacancies among the elder brethren, when removed by death or otherwise.

The master, wardens, assistants, and elder brethren, are by charter invested with the following powers:

1. That of examining the mathematical children of Christ's hospital. 2. The examination of the masters of his majesty's ships; the appointing pilots to conduct ships in and out of the river Thames; and the amercing all such as

shall presume to act as master of a ship of war or pilot, without their approbation, in a pecuniary mulct of twenty shillings.

3. The settling the several rates of pilotage, and erecting light-houses, and other sea-marks upon the several coasts of the kingdom, for the security of navigation; to which light-houses all ships pay one halfpenny a ton. 4. The granting licences to poor seamen, not free of the city, to row on the river Thames for their support, in the intervals of sea-service, or when past going to sea. 5. The preventing of aliens from serving on board English ships, without their license, upon the penalty of five pounds for each offence. 6. The punishing seamen for desertion, or mutiny, in the merchants service. 7. The hearing and determining the complaints of officers and seamen in the merchants service; but subject to an appeal to the lords of the admiralty, or the judge of the court of admiralty.

To this company belongs the ballast-office, for clearing and deepening the river Thames, by taking from thence a sufficient quantity of ballast, for the supply of all ships that sail out of that river; in which service sixty barges, with two men in each, are constantly employed; and all ships that take in ballast pay them one shilling a ton, for which it is brought to the ship's sides.

In consideration of the great increase of the poor of this fraternity, they are by their charter empowered to purchase in mortmain lands, tenements, &c. to the amount of five hundred pounds per annum; and also to receive charitable benefactions of well disposed persons, to the like amount of five hundred pounds per annum, clear of reprises.

There are annually relieved by this company about three thousand poor seamen, their widows and orphans, at the expence of about six thousand pounds.

They commonly meet to choose their master at their house at Deptford; but are not obliged to do it there. Their meetings are generally on Wednesdays and Saturdays: but their courts are not constantly fixed to a set time.

TRINOMIAL, or **TRINOMIAL ROOT**, in mathematics, is a root consisting of three parts connected together by the signs + or -, as $x + y + z$, or $a + b - c$.

TRIO, in music, a part of concert wherein three persons sing; or more properly a musical composition consisting of three

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three parts. Trios are the finest kinds of composition, and these are what please most in concerts.

TRIOCTILE, in astrology, an aspect or situation of two planets with regard to the earth, when they are three octants or eight parts of a circle, that is, 135° distant from each other. This aspect, which some call the sesquiquadrans, is one of the new aspects superadded to the old ones by Kepler.

TRIONES, in astronomy, a sort of constellation or assemblage of several stars in the ura minor, commonly called Charles's wain.

TRIONUM, in botany, a genus of plants, the corolla whereof consists of five patent petals, vertically cordated, and united together at the base: the fruit is an ovated quinquangular capsule, consisting of five cells, and containing five valves; the seeds are numerous, and kidney shaped.

TRIOPTERIS, in botany, a genus of plants, the corolla whereof consists of six oval, erecto patulous, equal and permanent petals, surrounded by three others smaller than themselves, but equal to one another: there is no pericarpium, the seeds are three, erect and carinulated at the back; each of them has externally at its base an ala, and at its apex two; these ala are what in the flowering state of the plant appear to be petals, but they are not truly such.

TRIOSTEUM, in botany, a genus of plants, the flower of which has a permanent empalement of one leaf, cut into five segments; it has a tubulous flower of one petal, with a short brim, cut into five parts, which stand erect, and five slender stamina the length of the tube, terminated by oblong summits, with a roundish germen, supporting a cylindrical style, crowned by a thick stigma. The germen afterward becomes an oval berry with three cells, each including one hard, three-crowned, obtuse seed.

TRIP, a sea term. A ship is said to bear her top-sails a-trip, when she carries them hoisted up to the highest.

TRIPARTITE, something divided into three parts, or made by three parties, as indenture tripartite, &c.

TRIPARTITION, a division by three, or the taking the third part of any number or quantity.

TRIPHONGUE, in grammar, an assemblage or concurrence of three vowels in the same syllable, as *que*.

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TRIPLE, in music, on of the species of measure or time. Triple time consists of many different species, of which there are in general four, each of which has its varieties. The common name triple is taken hence, that the whole half of the bar is divisible into three parts, and is beaten accordingly. The first species is called the simple triple, wherein the measure is equal to three semibreves, three minims, three crotchets, three quavers, or three semiquavers, which are marked thus, $\frac{3}{4}$, $\frac{3}{8}$, $\frac{3}{16}$, $\frac{3}{32}$, but the last is not much used, except in church music. In all these the measure is divided into three equal parts or times, called thence triple time, or the measure of three times; of which two are beat down, and the third up. The second species is the mixed triple; its measure is equal to six crotchets, or six quavers, or six semiquavers, and accordingly is marked $\frac{6}{8}$, or $\frac{6}{16}$, or $\frac{6}{32}$; but the last is seldom used. This measure here is usually divided into equal parts or times, of which one is beat down and one up; but it may also be divided into six times, of which the first two are beat down and the third up, then the next two down and the last up; that is, each half of the measure is beat like the simple triple, on which account it may be called the compound triple, and because it may be thus divided either into two or six times, that is, two triples, it is called mixed, and by some the measure of six times. The third species is the compound triple, consisting of nine crotchets, or quavers, or semi-quavers, marked $\frac{9}{8}$, $\frac{9}{16}$, $\frac{9}{32}$; the first and last are little used; some also add $\frac{9}{4}$, $\frac{9}{2}$, which are never used; some add also other two, viz. six semi-breves and six minims, marked $\frac{6}{4}$ or $\frac{6}{2}$, but these are not in use. This measure is divided into three equal parts or times, whereof two are beat down and one up; or each third part may be divided into three times, and beat like the simple triple, on which account it is called the measure of the nine times. The fourth species is a compound measure of the second species, containing twelve crotchets or quavers, or semi-quavers, marked $\frac{12}{8}$, $\frac{12}{16}$, to which some add $\frac{12}{4}$ and $\frac{12}{2}$, which are never used; nor are the first and third much used; especially the latter. The measure here may be divided into two times, and beat one down

down and one up; or each half may be divided and beat as the second species, either by two or three, in which case it will make in all twelve times; and hence it is called the measure of twelve times. The French and Italian authors make a great many more species and divisions of triple time, unknown, or at least unregarded, by our English musicians, and therefore not necessary to be dwelt on here.

TRIPPLICATE RATIO, the ratio which cubes bear to one another. See *Cube*.

TRIPPLICITY, or **TRIGON**, among astrologers, division of the signs according to the number of the elements, each division consisting of three signs. TriPLICITY is frequently confounded with trine aspect, tho' strictly speaking the two are very different things; a triplicity is only used with regard to the signs, and trine on the contrary, with regard to the plants. The signs of triplicity are those which are of the same nature, and not those which are in trine aspect. Thus Leo, Sagittarius and Aries, are signs of triplicity, because those signs are by these writers all supposed fiery.

TRIPOD, in antiquity, a famed sacred seat or stool, supported by three feet, whereon the priests and sibils were placed to render oracles. It was on the tripod that the gods were said to inspire the Pythians with the divine fury and enthusiasm, wherewith they were seized in the delivery of their predictions.

* **TRIPOLI**, a state of Africa, in Barbary, bounded on the N. by the Mediterranean sea, on the S. by the country of the Berberies, on the W. by the kingdom of Tunis, Biledulgerid, and the territory of Gadamis, and on the E. by Egypt. It is 925 miles along the sea coast, but the breadth is various. Some parts of it are fruitful, but that towards Egypt is only a sandy desert. It is governed by a dey, but a Turkish bashaw resides here, who receives his authority from the grand seignior, and has a power of controuling the dey, and levying the taxes on the people. The dey is elected by the soldiers, who make no scruple of deposing him when they please.

TRIPOLI, in natural history, the name of an earthy substance, much used by the lapidaries to polish stones, and by the braziers, and other the like artists, to clean metalline vessels.

TRIPPING, in heraldry, the quick motion of all sorts of deer, and of some

other creatures, represented with one foot as it were on a trot.

* **TRIPTOLEMUS**, in fabulous history, the son of Celeus who hospitably received Ceres, when that goddess went to Athens in search of her daughter, she in return taught him to sow corn, and nourished the young Triptolemus by day with celestial milk, and at night covered him with fire to render him immortal, but the latter being discovered by Celeus, he cried out, and discovered himself, on which he was killed by the goddess. At length Ceres placed Triptolemus in her chariot drawn by winged serpents, and sent him through the earth, to teach mankind to plow, and sow the ground. Mythologists say that Triptolemus was the first who taught the Greeks to cultivate the earth. It is also said that he gave laws to the Athenians, which were reduced to three heads; "Adore the gods, honour your parents, and eat no flesh."

TRIPTOTES, in grammar, defective nouns which have only three cases; such is *mele, tempe, grates, prece, &c.*

TRIQUETROUS, among botanists, expresses a fruit or leaf that has three sides or faces all flat. This leaf is usually subulated, or grows gradually smaller from the base to the point.

TRIREME, or **TRIREMIS**, in antiquity, a gally with three ranks of oars on a side.

TRISECTION, or **TRISSECTION**, the dividing a thing into three. The term is chiefly used in geometry, for the division of an angle into three equal parts. The trisection of an angle geometrically, is one of those great problems whose solution has been so much sought by mathematicians for these two thousand years, being in this respect on a footing with the quadrature of the circle, and the duplication of the cube angle.

TRISPAST, in mechanics, a machine with three pulleys, or an assemblage of three pulleys for raising of great weights.

TRISYLLABLE, or **TRYSSABLE**, in grammar, a word consisting of three syllables.

TRITE, in music, the third musical chord in the system of the ancients.

TRITICEA, the name whereby some authors call the triticum.

TRITICUM, in botany, a genus of plants, the corolla whereof consists of two valves, nearly equal in size, and of the bigness of those of the cup. The exterior

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terior valve is bellied with an obtuse end, terminated by a point; the interior valve is plane. The corolla serves instead of a pericarpium, inclosing the seed, which is single, obtuse, and furrowed on one side. This genus comprehends the common wheat, the spelt-corn, and couch grass. See *Wheat*, &c.

TRITON, in ichthyology, a genus of fish, the body of which is oblong, the rostrum at the mouth of a spiral form, the tentacula fourteen in number, and twelve of them cheliferous.

TRITON, in poetry, a sea demi-god, held by the ancients to be an officer or trumpeter of Neptune, attending on him, and carrying his orders and commands from sea to sea. The poets represent him as a half-man, half-fish, terminating in a dolphin's tail, and bearing in one hand a sea-shell, which serves as a trumpet. Some of the ancients make him the son of Neptune and the nymph Salacia; Hesiod, of Neptune and Amphitrite; Neumenius, in his book *De Piscationibus*, makes him the son of Oceanus and Tethys; and Lycophron, the son of Nereus. But, though Hesiod and the mythologists only speak of one Triton, the poets have imagined several, giving some of them for trumpeters to all the sea-gods, particularly to Neptune and Venus; accordingly they were frequently introduced on the ancient theatres, in the Naumachia.

TRITONE, in music, a false concord consisting of three tones, or a greater third and a greater tone. Its ratio, or proportion in numbers is of 45 to 32. In dividing the octave we find on one side the false fifth, and the tritone on the other. The tritone is a kind of redundant fourth, consisting of three tones, whence its name; or more properly of two tones, with a greater semi-tone and a lesser, as of *ut* to *fa*, sharp; of *fa* to *si*, flat, &c. But it is not, as many imagine, a greater fourth, for the fourth is a perfect interval, which does not admit of any majority or minority; nor must the tritone be confounded with the false fifth, for the tritone only comprehends four degrees, viz. *ut*, *re*, *mi*, *fa*, sharp; whereas the false fifth comprehends five, viz. *fa*, sharp, *sol*, *la*, *si*, *ut*. Besides that, among the six semi tones, which compose the tritone chromatically, there are three greater and three lesser; whereas, among the six semi-tones, which compose the false fifth, there are only two lesser and four greater.

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TRITURATION, in pharmacy, the act of reducing a solid body into a subtile powder; called also levigation and pulverization. See *Levigation* and *Pulverization*.

TRITURATION, is also used in medicine for the action of the stomach on the food, whereby it is fitted for nourishment.

TRIUMFETTA, in botany, a genus of plants, the flower of which has no empalement, but it has five linear, erect, obtuse petals, which turn inward; it has ten awl-shaped, rising stamina the length of the petals, terminated by single summits, and a roundish germen, supporting a style the length of the stamina, crowned by an acute bifid stigma. The germen afterward becomes a globular capsule, set with long prickles on every side, having four cells, each containing one seed, which is convex on one side, and angular on the other.

TRIUMPH, a solemnity practised by the ancient Romans, to do honour to a victorious general.

There were two sorts of triumphs, the greater and the lesser, particularly called ovation: of these, the triumph was much the more splendid procession. None were capable of this honour, but the dictator, consuls, and prætors; though there are examples to the contrary, as particularly in Pompey the Great, who had a triumph decreed him when he was only a Roman knight, and had not yet reached the senatorial age. The triumph was the most pompous shew among the ancients: authors usually attribute its invention to Bacchus, and tell us that he first triumphed upon the conquest of the Indies, and yet this ceremony was only in use among the Romans. The Grecians had a custom which resembled the Roman triumph; for the conquerors used to make a procession through the middle of their city, crowned with garlands, repeating hymns and songs, and brandishing their spears: the captives were also led by them, and all the spoils exposed to public view. The order of a Roman triumph was briefly thus: The senate having decreed the general a triumph, and appointed a day, they went out of the city-gate to meet the conqueror, and marched in order with him through the city. The cavalcade was led up by the musicians, who had crowns on their heads; after them came several chariots, with plans and maps of the cities and countries subdued, done on relieve: they were followed by the

the spoils taken from the enemy, their horses, arms, gold, silver, machines, tents, &c. After these came the kings, princes, or generals subdued, loaden with chains, and followed by mimics or buffoons, who insulted over their misfortunes. Next came the officers of the conquering troops with crowns on their heads. Then appeared the triumphal chariot, in which was the conqueror, richly clad, in a purple robe embroidered with figures of gold, setting forth his glorious achievements: his buskins were beset with pearl, and he wore a crown, which at first was only laurel, but afterwards gold. One hand held a laurel branch, the other a truncheon. At his feet were his children, or sometimes on the chariot horses. It is added, that the public executioner was behind him, to remind him from time to time that these honours were transitory, and could not screen him from the severity of the laws, if he should ever be found delinquent. As the triumphal chariot passed along, they strewed flowers before it. The music played in the praise of the conqueror, amidst the loud acclamations of the people crying *Io Triumphe*. The chariot was followed by the senate clad in white robes, and the senate by such citizens as had been set at liberty or ransomed. The procession was closed by the sacrificers, and their officers and utensils, with a white ox led along for the chief victim. In this order they proceeded through triumphal arches to the capitol, where the victims were slain. In the mean time all the temples were open; the altars loaden with offerings and incense; games and combats were celebrated in the public places, and rejoicings appeared every where. What was horrible amidst all this mirth, was, that the captives, when arrived at the Forum, were led back to prison and strangled: it being a point of religion with them not to touch the victims till they had taken full revenge of their enemies. The rites and sacrifices over, the triumpher treated the people in the capitol, under the porticoes, and sometimes in the temple of Hercules. An ingenious author observes, that it was the greatest diminution of the Roman glory imaginable that in their institution of public triumphs, they led their enemies in chains, when they were prisoners. *Potter's Græc. Antiq. Kennet's Rom. Ant. Diss. Triumvir.*

TRIUMVIR, one of three persons who govern absolutely, and with equal

authority, in a state. It is chiefly applied to the Roman government: Cæsar, Pompey, and Crassus, were the first triumvirs who divided the government amongst them. There were also other officers, called triumvirs; as the triumviri or tresviri capitales, who were the keepers of the public goal; they had the office of punishing malefactors; for which purpose they kept eight lictors under them. There were also triumviri monetales, the masters of the mint; whence the following mark is still extant on many antient coins, *III VIRI*. Sometimes they were styled triumviri *A. A. E. F. F.* these letters standing for *auro, argento, ære, flando, feriendis*. There were likewise nocturnal triumviri, instituted to prevent or extinguish fires in the night.

TRIUMVIRATE, an absolute government administered by three persons, with equal authority. There were two famous triumvirates at Rome; Pompey, Cæsar, and Crassus, as mentioned in the preceding article, established the first; and Augustus, Marc Antony, and Lepidus, the second; which gave the last blow to the Roman republic; for Augustus having vanquished Lepidus and Antony, the triumvirate sunk into a monarchy.

TROCHAIC VERSE, in Latin poetry, a kind of verse, so called because the trochees chiefly prevail, as the iambus does in the iambic. It generally consists of seven feet and a syllable; the odd feet, for the most part, consist of trochees, though a tribrachys is sometimes admitted, except in the seventh foot: these two feet are likewise used in the other places, as is also the spondeeus, dactylus, and anapaustus.

TROCHANTER, in anatomy, a name given to two apophyses, situated in the upper part of the thigh-bone: they receive the tendons of most of the muscles of the thigh.

TROCHE, in pharmacy, a sort of medicine, made of glutinous substances, into little cakes, and afterwards exsiccated. The four following rules are to be observed in making of them: 1. The ingredients are to be reduced to a powder. 2. If the mass proves so glutinous as to stick to the fingers in making up, the hands may be anointed with any convenient sweet or aromatic oil; or else sprinkled with powder of starch, or with that of liquorice. 3. In order to dry thoroughly the troches, put them on an inverted sieve, in a shady airy place, and

frequently turn them. 4. The troches are to be kept in glass vessels, or in earthen ones well glazed. There are troches of various kinds, and for various intentions; as purgative, alterative, aperitive, corroborative, &c. The chief troches now in use are those of myrrh and liquorice, and those of the testaceous powders for the heart-burn.

TROCHEE, in the Greek and Latin poetry, a foot consisting of two syllables, the first long, and the second short, as in the words *mūā* and *sēvāt*.

TROCHILUS, in architecture, a name used by the ancients for what the moderns call scotia.

TROCHITE, in natural history, a name given to the separate joints of the entrochus.

TROCHLEA, one of the mechanical powers, usually called a pulley. See *Pulley*.

TROCHLEARES, in anatomy, a name given to the oblique muscles of the eye.

TROCHOID, in geometry, a curve more generally known by the name of cycloid.

TROCHUS, in natural history, the name given by authors to a genus of shells; some of the species of which resemble the figure of the trochus, or top which boys play with.

TROJA, or **TROJAN GAMES**, games said to be instituted by Ascanius, son of Æneas, and afterwards kept up by the Romans with great solemnity. They were celebrated by companies of boys, neatly dressed, and furnished with little arms and weapons, who mustered in the public Circus. They were chosen, for the most part, out of the noblest families of Rome, and the captain of them had the honourable title of Princeps Juventutis, being sometimes next heir to the empire, and seldom less than the son of a principal senator. A particular account of these games may be seen in the fifth Æneid of Virgil, beginning at verse 545.

TROLLIUS, globe-ranunculus, in botany, a genus of plants, the flower of which has no empalement; it has about fourteen oval petals, whose points meet together, with nine nectariums, which are narrow, plain, incurved, and umbilicated, perforated at their base, and a great number of bristly stamina, terminated by erect summits, with numerous germina sitting close like a column, hav-

ing no styles, but are crowned by pointed stigmas. The germen afterward becomes so many capsules, collected into an oval head, each containing one seed. There are two species of this plant enumerated by Mr. Miller.

TRONAGE, an ancient customary toll, paid for weighing of wool. This word is particularly mentioned in a charter granted to the mayor and citizens of London; in which city there is an officer called tronator, whose business it is to weigh the wool that is brought thither.

TRONCONNIE, in heraldry, denotes a cross, or other thing, cut in pieces and dismembered, yet so as all the pieces keep up the form of a cross, though set at a small distance from one another.

TROOP, a small body of horse or dragoons, about fifty or sixty, sometimes more, sometimes less; commanded by a captain. Each troop, besides a captain, has a lieutenant, cornet, quarter-master, and three corporals, who are the lowest officers of a troop.

TROPEOLUM, the Indian cress, in botany, a genus of plants, the flower of which consists of five roundish petals inserted into the divisions of the cup; the two upper petals are sessile; the three others have very long and barbed ungues; the fruit consists of three convex capsules, sulcated and striated on one side, and angular on the other; the seeds are three, gibbous on one side, and angulated on the other, but upon the whole somewhat roundish, and striated deeply.

There are two sorts of this plant, the first growing naturally in Peru; and the second about Lima. The first sort is less common at present in the English gardens than the second, though it was formerly more so.

The flowers of these plants are frequently eaten in sallads; they have a warm taste like the garden cress, and are esteemed very wholesome: they are likewise used for garnishing dishes. The seeds are pickled, and by some are preferred to most kinds of pickles for sauce.

TROPE, in rhetoric, a kind of figure of speech, whereby a word is removed from its first and natural signification, and applied with advantage to another thing, which it does not originally mean; but only stands for it, as it has a relation to, or connection with it: as in this sentence, "God is my rock." Here the trope lies in the word *rock*, which being firm and immoveable, excites in our minds

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minds the notion of God's unfailling power, and the steady support which good men receive from their dependence upon him.

Tropes are used for the sake of an agreeable variety; they divert the mind, and revive attention, when it begins to flag and be weary. In many cases there is an absolute necessity for the writer or speaker to repeat the same thing several times; therefore, to prevent the tiresome repetition of the same words, he carefully diversities his expressions and judiciously intermixes plain and figurative language.

TOPHY, among the ancients, a pile or heap of arms of a vanquished enemy, raised by the conqueror in the most eminent part of the field of battle. The trophies were usually dedicated to some of the gods, especially Jupiter. The name of the deity to whom they were inscribed, was generally mentioned, as was that also of the conqueror. The spoils were at first hung upon the trunk of a tree; but instead of trees, succeeding ages erected pillars of stone, or brass, to continue the memory of their victories. To demolish a trophy was looked upon as a kind of sacrilege, because they were all consecrated to some deity.

The representation of a trophy is often to be met with on medals of the Roman emperors, struck on occasion of victories; wherein, besides arms and spoils, are frequently seen one or two captives by the sides of the trophy. In architecture trophy signifies an ornament which represents the trunk of a tree, charged or encompassed all round about with arms or military weapons, both offensive and defensive.

TROPHY MONEY, denotes certain money annually raised in the several counties of the kingdom, towards providing harness, and maintaining the militia.

TROPICS, in astronomy and geography, two circles supposed to be drawn on each side of the equinoctial, and parallel thereto. That on the north side of the line is called the tropic of cancer, and the southern tropic has the name of capricorn, as passing through the beginning of those signs. They are distant from the equinoctial $23^{\circ} 25'$. Two circles drawn at the same distance from the equator on the terrestrial globe, have the same names in geography, and they include that space or part of the sphere, which is called the torrid zone, because the sun is, at one time or other, perpendicular over every part of that zone, and extremely torrifies or heats it. See *Zone*.

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TROT, in the manege, one of the natural paces of a horse performed with two legs in the air, and two on the ground at the same time cross-wise, like St. Andrew's cross, and continuing so alternately to raise the hind-leg of the one side, and the fore-leg of the other side at once, leaving the other hind and fore-leg upon the ground, till the former come down. In this motion, the nearer the horse takes his limbs from the ground, the opener, the evenner, and shorter his trot will be. If he takes up his feet slovenly, it is a sign of stumbling and lameness; if he treads narrow or cross, it betokens interfering or falling; if he treads long it shews over-reaching; if he steps uneven, it bespeaks toil and weariness.

TROVER, in law, an action which a man hath against one that, having found any of his goods, refuseth to deliver them upon demand.

TROUGH, *of the Sea*, the hollow or cavity made between two waves or billows in a rolling sea.

TROUT, a very valuable river-fish, the distinguishing characters of which are these: its body is long; its head short and roundish; the end of its nose or snout obtuse and blunt; its tail is very broad; its mouth large; and each jaw furnished with one row of sharp teeth; and in its palate there are three parcels of teeth, each of an oblong figure in the congeries; and all meeting in an angle near the end of the nose; and the tongue has six, eight, or ten teeth also on it, and its sides are beautifully variegated with red spots.

TRUCE, in the art of war, denotes a suspension of arms, or a cessation of hostilities between two armies, in order to settle articles of peace, bury the dead, or the like.

TRUCKS, among gunners, round pieces of wood, in form of wheels, fixed on the axle-trees of carriages, to move the ordnance at sea, and sometimes also at land.

TRUE, something agreeable to the reality of things, or to truth.

TRUE place of a planet or star, in astronomy, a point of the heavens, shewn or pointed out by a right line, drawn from the center of the earth through the center of the planet or star.

TRUFFLES, in natural history, a kind of subterraneous vegetable production, not unlike mushrooms.

TRUMPET, a musical instrument, the most noble of all portable ones of the

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wind kind, used chiefly in war among the cavalry, to direct them in the service.

Marine TRUMPET, a musical instrument consisting of three tubes, which form its triangular body. It has a very long neck, with one single string, very thick, mounted on a bridge, which is firm on one side, but tremulous on the other. It is struck by a bow with one hand, and with the other the string is pressed, or stopped, on the neck by the thumb. It is the trembling of the bridge, when struck, that makes it imitate the sound of a trumpet; which it does to that perfection, that it is scarce possible to distinguish the one from the other: and this is what has given it the denomination of marine trumpet; though, in propriety, it is a kind of monochord.

Harmonical TRUMPET, an instrument that imitates the sound of a trumpet; which it resembles in every thing, excepting that it is longer, and consists of more branches: it is generally called sackbut.

Speaking TRUMPET, a tube from six to fifteen feet long, made of tin, perfectly straight, and with a very large aperture; the mouth-piece being big enough to receive both lips.

The speaking trumpet, or stentorophonic tube, as some call it, is used for magnifying of sound, particularly that of speech, and thus causing it to be heard at a great distance. How it does this will be easy to understand from its structure.

It is also evident how instruments of this form assist the hearing greatly; for the weak and languid pulses of the air being received by the large end of the tube, and greatly multiplied and condensed by the tremulous motion of the parts of the tube, and air agitated by them, are conveyed to the ear by the small end, and strike it with an impetus much greater than they would have done without it.

But when any quantity of motion is communicated to a series of elastic bodies, it will receive the greatest augmentation when those bodies are in geometrical proportion. Therefore, since the force of the voice is impressed upon, and gradually propagated through, a series of elastic portions of air in a geometrical ratio to each other, it shall receive the greatest augmentation possible.

Now, since by construction it is $Ba = ab = bc = cd$, &c. and also $a k : b l :: b l : c m :: c m : d n$, and so on, therefore the points $k, l, m, n, o, p, q, r, s, A$, will, in this case, form that curve line, which is

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called the logarithmic curve; consequently, a trumpet, formed by the revolution of this curve about its axis, will augment the sound in a greater degree than any other figured tube whatever.

Listening, or Hearing TRUMPET, an instrument invented by Joseph Landini, to assist the ear in hearing of persons speak at great distance, without the assistance of any speaking trumpet.

TRUMPET-SHELL, in natural history, the English name of the buccinum of authors. See *Buccinum*.

TRUMPETER, in zoology, a name given in England to a particular species of pigeon, called by Moore the columba tibicen. This species is of the middle size of the common pigeon, and made considerably like it; but it is pearly-eyed; is of a mottled black, and is feathered down to the legs and feet, and is turn-crowned like the nun, and some other species; sometimes like the finikin, but much larger: this seems to be the best sort, as being most melodious. The best character, to know them by, is a tuft of feathers growing at the root of the beak; and, the larger this tuft is, the more they are esteemed. The reason of their name is, that they imitate in their cooing the sound of the trumpet; but, to be often entertained with their melody, it is necessary to feed them frequently with hemp-seed. *Moore's Columbarium*.

Fest of TRUMPETS; an annual festival of the Jews, expressly enjoined by the law of Moses, and observed upon the first day of the seventh month, called Tisri, which was the beginning of the civil year.

TRUNCATED, in general, an appellation given to such things as have, or seem to have, their points cut off: thus we say, a truncated cone, pyramid, leaf, &c.

TRUNCHEON, a short staff, or baton, used by kings, generals, and great officers, as a mark of their command.

TRUNDLE, a sort of carriage with low wheels, whereon heavy and cumbersome burdens are drawn.

TRUNDLE-SHOT. See *Shot*.

TRUNK, among botanists, denotes the stem, or body, of a tree; or, that part between the ground and the place where it divides into branches.

In anatomy, trunk is used for the bust of a human body, exclusive of the head and limbs, comprehending the abdomen and thorax. See *Abdomen* and *Thorax*.

Trunk is also used for the main body of

of an artery, or vein, in contradistinction to the branches and ramifications thereof.

Trunk-roots of a plant, are little roots which grow out of the trunks of plants.

These are of two kinds: 1. Such as vegetate by a direct descent, the place of their eruption being sometimes all along the trunk, as in mints, &c. and sometimes only in the utmost point, as in brambles.

2. Such as neither ascend nor descend, but shoot forth at right angles to the trunk; which therefore, though as to their office they are true roots, yet, as to their nature, are a medium between a trunk and a root.

TRUNNIONS, or TRUNIONS of a piece of Ordnance, are those knobs or bunches of the gun's metal, which bear her up on the cheeks of the carriage: and hence the trunnion-ring is the ring about the cannon, next before the trunnions.

TRUSS, a bundle, or certain quantity of hay, straw, &c.

A truss of hay is to contain fifty-six pounds, or half an hundred weight; 36 trusses make a load. In June and August the truss is to weigh 60 pounds, on forfeiture of eighteen shilling per truss.

A truss of forage is as much as a trooper can carry on his horse's crupper.

TRUSS of Flowers, is used, by florists, to signify many flowers growing together on the head of a stalk, as in the cowslip, auricula, &c.

TRUSS is also used for a sort of bandage or ligature, made of steel, or the like matter wherewith to keep up the parts, in those who have hernias or ruptures.

TRUST, in law, signifies, in general, that confidence which one person reposes in another; and in case of non-performance, or breach of this trust, the remedy is by bill in equity, as the common-law usually takes no notice of trusts.

TRUSTEE, one who has an estate, or money, put or trusted in his hands, for the use of another.

Where two or more persons are appointed trustees, if one of them only receives all or the greatest part of the profits of the lands, &c. and is in arrear, and unable to satisfy the person to whom he is seized in trust, the other, in that case, shall not be answerable for more than comes to his hands.

TRUTH, a term used in opposition to falsehood, and applied to propositions which answer, or accord, to the nature and reality of the thing of which some-

thing is affirmed or denied. Truth, according to Mr. Locke, consists in the joining or separating of signs, as the things signified by them do agree or disagree one with another. Now the joining or separating of signs is what we call making of propositions. Truth then properly relates only to propositions, of which there are two sorts, mental and verbal; as there are two sorts of signs commonly made use of, viz. ideas and words. Mental propositions are those wherein the ideas in our understanding are put together, or separated, by the mind perceiving or judging of their agreement or disagreement. Verbal propositions are words put together, or separated, in affirmative or negative sentences: so that a proposition consists in joining or separating of signs, and truth consists in putting together, or separating those signs, according as the things they stand for agree or disagree.

Moral TRUTH consists in speaking things according to the persuasion of our minds, and is called also veracity.

Metaphysical, or Transcendental TRUTH, is nothing but the real existence of things conformable to the ideas which we have annexed to their names.

* TRUTH, in the pagan worship, one of the virtues deified by the Romans. She was represented as a graceful woman, the mother of Virtue, with looks serene, courteous, cheerful, and modest, and was painted in garments of the purest white. She was described as the pledge of honesty, as the bulwark of honour, and the light and joy of human society.

TRUTINATION, the act of weighing or ballancing a thing.

TRY, in the sea language. A ship is said to try, or lie a-try, when no sails are abroad but the main-sail, or mizen-sail.

TSIN, in natural history, the name given by the Chinese to a stone which they make great use of in their manufacture of porcelain ware. It is of a deep blue colour, much resembling Roman vitriol in appearance, and is found in lead mines, and supposed to contain some particles of lead; its effects being the same in the porcelain manufacture as those of ceruss or white lead in making the other colours penetrate into the substance of the vessels. The deep violet colour that we see so beautiful on the China ware, is usually made with this stone. They find it about Canton and Peking; but the latter place affords the best, and it sells at greatly the best price. The painters in enamel melt,

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melt this stone in their way, and use it very much; they form many beautiful works by laying it upon silver; but it is too apt to come off in time.

TUB, in commerce, an indeterminate quantity or measure: thus, a tub of tea contains about sixty pounds; and a tub of camphor from 50 to 80 pounds.

TUBE, in general, a pipe, conduit, or canal; a cylinder hollow within side, either of lead, iron, wood, glass, or other matter, for the air or some other fluid to have a free passage or conveyance through.

Small silver or leaden tubes are frequently used by surgeons to draw off blood, matter, or water, from the different parts of the body.

TUBE, in astronomy, is sometimes used for a telescope, or, more properly, for that part thereof into which the lenses are fitted, and by which they are directed and used.

TUBER, or **TUBERCLE**, in botany, a kind of round turgid root, in form of a knob or turnip. The plants which produce such roots are hence denominated tuberose, or tuberous plants.

TUBER, or **TUBEROSITY**, in medicine, is used for a knob, or tumour, growing naturally in any part; in opposition to tumours, which arise accidentally, or from disease.

TUBERCLES, among physicians, little tumours which suppurate and discharge pus, and are often found in the lungs, especially of consumptive persons.

TUBEROSE, *Poliantbes*, in botany. See *Poliantbes*.

The varieties of this plant are, the tuberose with a double flower, striped leaved tuberose, and the tuberose with a smaller flower: the last is mentioned by several authors as a distinct species, but is certainly a variety.

TUBEROUS, or **TUBEROSE-ROOTS**, in botany. See *Tuber*.

TUBIPORA, or **TUBULARIA**, a genus of submarine plants, belonging to the cryptogamia class, of the hardness of coral, and consisting of cylindric tubes rising from a thin crust of the same sort of matter with themselves.

TUBULATED FLOWER, in botany, a term used by authors to express those smaller flowers, a great number of which go to compose one larger compound flower. These are called tubulated in distinction from another kind of them, which are from their shape called ligulated. The tubulated floscules gene-

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rally compose the disk, and the ligulated ones the radius of the compound flowers. The tubulated ones are formed into a hollow cylinder, which expands into a mouth at the top, and is divided into five equal segments, which stand expanded, and in some measure bent backwards.

TUBULI FOSSILS, in natural history, the tubules, or cases of sea-worms, found buried in the earth. They are met with of various sizes, sometimes complete, and buried in the strata of earth or stone; sometimes they are more or less perfect, and are immersed in masses of the ludus helmontii or septariae, and in this state they make one kind of lapis syringoides, or pipe-stone: but the most beautiful syringoides, or pipe-stones, are the parts of the bottoms of ships, or posts fixed in the sea, which have been pierced in their original state of wood, by these sea-worms, and afterwards petrified with the cases or tubuli of the worms remaining in them; these are usually of a pale yellow or whitish wax colour, and the body of the mass of a brownish or blackish hue, but retaining the structure of the wood: of these there are beautiful specimens in great abundance on the shore of the island of Sheppy. We have the very same substances also buried in our clays, pits about London and at Richmond; but in these the wood is highly saturated with the matter of the common vitriolic pyrites, and the pipes often filled with the same substance.

TUBULI LACTIFERI, in anatomy, the small tubes or vessels through which the milk flows to the nipples of women's breasts.

TUBULUS MARINUS, or **CANALIS**, in natural history, a genus of univalve shells, of an oblong figure, terminating in a point, and hollow within, so as to resemble a tube or horn; and hence have, by some old writers, been called dentalia.

TUCK of a Ship, the trussing or gathering up the quarter under water; which, if she lie deep, makes her have a broad, or, as they call it, fat quarter, and hinders her steering, by keeping the water from passing swiftly to her rudder; and if this trussing lie too high above the water, she will want bearing for her works behind, unless her quarter be very well laid out.

TULIP, *Tulipa*, in botany, a genus of plants, the flower of which has no empalement; it is of the bell-shape, composed of six oblong, oval, concave, erect

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erect petals; it has six awl-shaped stamens, which are shorter than the petals, terminated by oblong four-cornered summits, and a large oblong, taper, three-cornered germen, having no style, crowned by a triangular, three-lobed, permanent stigma. The germen afterwards turns to a three-cornered capsule, having three cells, which are filled with compressed seeds, lying over each other in a double order. There are two species of tulips: the first sort was formerly preserved in the English gardens; but since there have been so many varieties of the second sort propagated in England, the first has been rejected, and is now only to be found in old neglected gardens. The petals of this flower end in acute points; the flower is yellow, and nods on one side, and the leaves are narrower than those of the common sort.

TULIP-TREE, a very beautiful American tree, which produces flowers something like those of the tulip. There is a tree of this kind at Waltham-abbey, in Essex, which, when in bloom, is shewn as a great curiosity.

TUMBLER, a name given to a particular species of pigeon, called by Moore the columba revolvens. It has its name from its peculiar property of tumbling, when it is in the air, which they are very fond of doing, and effect exactly in the same manner as our posture-masters do it, by throwing themselves over backwards. It is a very small pigeon, and is always short bodied, full breasted, thin necked, narrow beaked, and has a small short head; the iris of the eye, in this species, is usually of a bright pearl colour. The English tumbler is usually of one plain colour, black, blue, or white: the Dutch is much of the same make, but has different colours, and is feathered on the legs sometimes; it has also a larger head, and thin skin round the eye. Some of the finest pigeons of this sort are bred from a mixture of the Dutch and English kinds. These pigeons are remarkable for the height they fly to; they never ramble far from home, but will rise almost perpendicularly, till they appear no larger than a sparrow, or become quite out of sight: they will often keep at this height five or six hours, and then come gradually down again: they will never tumble when they are at any great height, but only as they ascend or come down again. There are particular times also, at which those birds will take much higher flights than at others; but they

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ought to be kept by themselves, and practised to it by the company of one of their own species; for if they mix, while young, with other pigeons, they will learn to fly as they do: a flight of a dozen of these birds sent out together will keep so close as to be all in a compass that might be covered with a handkerchief; but they should never be turned out in foggy weather, or in high winds; in the first case they lose sight of their home, and perhaps never find it again, and, in the others, they are blown away, and, if they return, it is not till another day; in the mean time, lying out, they are in danger of cats, and other accidents.—Lastly, the hen should never be turned out with egg, for she is then sick, and not fit for flying; and besides, often drops her egg, and the breed is lost by it. *Moore's Columbarium.*

TUMEFACATION, the act of swelling or rising into a tumour. Inflammations and tumefactions of the testes frequently happen in a gonorrhœa, either from the weakness of the vessels, violent motion, unseasonable use of astringents, a neglect of purging, or the like.

TUMOR, or **TUMOUR**, in medicine and surgery, a preternatural rising or eminence on any part of the body. Tumour is also defined by physicians, a solution of continuity arising from some humour collected in a certain part of the body, which disjoins the continuous parts, insinuates itself between them, and destroys their proper form.

Pesilential TUMOURS. See *Bubo* and *Caruncle*.

TUN, or **TON**, originally signifies a large vessel or cask, of an oblong figure, largest in the middle, and diminishing towards its two ends, girt about with hoops, and used to put several kinds of merchandize in for their better carriage, as brandy, oil, sugar, skins, hats, &c. Some derive the word from *autumnus*, in regard it is then tuns are most needed: Du Cange derives it from *tunna* or *tonna*, words used in the base Latin for the same thing, whence also *tunnart*, to tun.

The term is also used for certain vessels of extraordinary bigness, serving to keep wine in for several years. In Germany there are many which are scarce ever emptied: the Heidelberg tun is famous.

The tun, we frequently, though improperly, call a hoghead.

TUN, or **TON**, is also a certain

tain measure for liquids, as wine, oil, &c.

The English tun contains two pipes, or four hogheads, or 252 gallons.

The tun of Amsterdam contains six aems or awms; and the aem four ankers, the anker two shekars, the shekar sixteen mingles; twelve shekars are equal to an English barrel or sixty-three gallons.

The tun of Bourdeaux and Bayonne contains four barrels, equal to three Paris muids. At Orleans and Berry it is about two Paris muids.

The tun of Malaga, Alicante, Seville, &c. is two bottas, equal to about thirty-six or thirty-seven shekars. The tun of Lisbon is two Portuguese bottas, equal to twenty-five shekars.

Tun is also a certain weight whereby the burthens of ships, &c. are estimated. The sea tun is computed to weigh forty hundred weight.

TUNE, or TONE, in music, that property of sounds whereby they come under the relation of acute and grave to one another. Though gravity and acuteness are mere terms of relation, the tune of the sound is something absolute, every sound having its own proper tone, which must be under some determinate measure in the nature of the thing. The only difference, then, between one tune and another, is in the degrees. If two or more sounds be compared together in this relation, they are either equal or unequal in the degree of tune. Such as are equal are called unisons. The unequal constitute what we call an interval, which is the difference of time between two sounds.

Sonorous bodies we find differ in tune. 1. According to the different kinds of matter; thus a wedge of silver sounds much more acute than a wedge of gold of the same shape and dimensions, in which case the tones are proportional to the specific gravity. 2. According to the different quantities of the same matter in bodies of the same figure, a solid sphere of brass, one foot diameter, sounds acuter than one of two feet diameter; in which case the tones are proportional to the quantity of matter. Here then are different tunes connected with different specific gravities and quantities of matter, as their immediate cause. In effect, the measures of tune are only sought in the relations of the motions that are the cause of sound, which are no way so discernible as in vibrations of chords.

TUNICA, a kind of waistcoat, or under garment, in use amongst the Romans. They wore it within doors by itself, and abroad under the gown. The common people could not afford the toga, and so went in their tunics, whence Horace calls them *populius tunicatus*. The several sorts of the tunic were the palmata, the angusticlavica, and the latyclavica. The first was worn by generals in a triumph, and perhaps always under the toga picta; it had its name either from the great breadth of the clavi, equal to the palm of the hand, or else from the figures of palms embroidered on it.

It was by these three different sorts of tunics that the three different orders of the Roman people were distinguished in habit.

TUNICA, in anatomy, is applied to the membranes which invest the vessels, and divers others of the less solid parts of the body; thus the intestines are formed of five tunics, or coats; for which see the article *Intestines*.

There are also five tunics, or coats, of the eye, for which see the article *Eye*.

* TUNIS, one of the states of Barbary, under the protection of the grand seignior, bounded on the N. and E. by the Mediterranean sea, and the kingdom of Tripoli, on the S. by several tribes of Arabs, and on the W. by Algiers. It extends 300 miles along the sea-coast from E. to W. and 250 from N. to S. This state was formerly monarchical, but in 1574 they threw off the yoke, and became a free state, only they pay a certain tribute to the emperor of the Turks, who has a bashaw who resides at Tunis. The air is so temperate, that the heat of the summer does not dry the leaves, nor the winter cause them to fall off; towards the E. the soil is not very fertile, for want of water; but towards the S. the mountains and vallies produce abundance of fruit. The western parts are the best, because they are in several places watered with rivers. There are plenty of citrons, oranges, grapes, and other fruit. In the woods and mountains are lions, wild beagles, ostriches, monkeys, camels, roe-bucks, hares, pheasants, partridges, and other game. The most remarkable rivers are the Guadilcarbar, Magrida, Magerada, and Caps. The water of this last is so hot, that it cannot be drank immediately, because it runs through a sandy desert. The Jews are generally the brokers, and are very numerous here, as they

they are in most towns on the coast of Barbary. They also carry on a considerable trade in linen and woollen cloth; and there are at least in Tunis 3000 drapers and weavers. The prevailing religion is Mahometanism. The Turkish bathaw resides here to receive the homage due to his master, on account of his protection of the state, and to receive the tribute.

TUNNAGE, is used for a custom or impost, payable to the crown for goods and merchandize imported or exported, and is to be paid after a certain rate for every tun thereof. This duty, as well as that of poundage, was first granted for life to king Charles II. and has been continued in the same manner to his royal successors, down to his present majesty king Geo. III.

TUNNEL-NET, a net for taking partridges, which should not exceed fifteen feet in length, nor be less than eighteen inches in breadth, or opening for the entrance.

TUNNING of Ale or Beer, a part of the process of brewing, or rather an operation which is the sequel thereof. When the beer has worked or fermented in an open vat as long as is proper, tun it up into seasoned vessels, that is, such as have had ale or beer in them before; for if it be put into new casks it must be made stronger than ordinary, else it will not keep so long, because the cask will imbibe the spirits, and the rest will soon become flat and vapid. It is best to tun beer just when it comes to a due fermentation, and gets a good head; for then it has the most strength to clear itself in the cask, and what works over may be put into the small beer, and must be supplied with fresh beer of the same brewing. When the beer is tunned, carry it while it works in the cask, into a good cellar, or proper place to preserve it; for if it be stirred after it has done working, it will be apt to grow stale, sour, and become alegal, unless it be drawn out into another cask.

TURBAN, or **TURBANT**, the head-dress of most of the Eastern nations. It consists of two parts, a cap, and a sash of fine linen, or taffety, artfully wound in divers plaits about the cap. The Turks call the sash *turbent*, whence we have formed *turban*. The cap has no brim, is pretty flat, though roundish at top, and quilted with cotton, but does not cover the ears. There is great art in giving the turban a fine air, and the

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making of them is a particular trade.

The sash of the Turks turban is white linen, that of the Persians red woollen.

These are the distinguishing marks of their different religions. Sophi, king of Persia, being of the sect of Ali, was the first who assumed the last colour, to distinguish himself from the Turks, who are of the sect of Omar, and whom the Persians esteem heretics. The Emirs, who pretend to be descended of the race of Mahomet, wear their turbans quite green, which was the colour wore by that false prophet. The grand seignior's turban is as large as a bushel, and so exceedingly respected by the Turks, that they scarce dare touch it. It is adorned with three plumes of feathers, enriched with diamonds and precious stones, and he has an officer on purpose to look after it. The grand vizier's turban has two plumes; so have those of divers other officers, only smaller one than another; others have only one, and others none at all. The turban of the officers of the divan is of a peculiar form.

TURBAN-SHELL, in natural history, the name of a genus of the echinodermata, which are of the hemispheric or spheroidal figure, and have their name from the Latin, *cidaris*, a Persian turban, as in some degree resembling that head-dress.

TURBINATED, a term applied by naturalists to shells which are spiral, or wreathed conically, from a larger basis to a kind of apex.

TURBINITE, fossil shells of the turbo kind, or stones found in those shells. Among the people who have objected to the shells found buried in the earth being the remains of real animals, it has been alledged by some, that these, in particular, are always of a blackish or ash colour, when found in chalk or clay, and white from the rocks, or when they have been bedded in stone.

TURBIT PIGEON, a particular species of pigeon, remarkable for its short bill, and called by the Dutch *cort-bek*, that is, short beak. Moore calls it in Latin, *columba fimbriata*. They are a light nimble pigeon, and, if trained to it, will take very high flights in the manner of the tumblers. *Moore's Columbarium*.

TURBITH ROOT, the root of a large convolvulus, growing in moist places near the sea coasts, in the island of Ceylon, Surat, Malabar, Goa, but most plentifully in Guzarotta, from whence

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the greatest quantities of the roots are brought into Europe. The root is generally about the thickness of the finger, though sometimes twice or thrice as thick, brownish on the outside, whitish within, with a white spongy woody pith; its taste is at first sweetish, afterwards acid and disagreeable.

Turbith root is a moderately strong purgative; as such the root and substance was formerly given, from a scruple to half a dram, and the resin to half a scruple; but since the introduction of jalap, turbith has been rarely used.

TURBO, in natural history, a genus of univalve shells, with a long, wide, and depressed mouth, in some species approaching to a round shape, and in some having teeth, in others not. They all grow narrow towards the base, and are auriculated, and terminate in a very long and sharp point.

TURBOT, or TURBUT, in ichthyology, the English name of a species of pleuronectes, with the eyes on the right side, and the body smooth. It grows to a considerable size, and is one of the most esteemed fish at table.

TURCOISE, or TURQUOISE, in natural history, an ore of copper, erroneously ranked among gems. There are indeed two kinds of turcois; the one a true and genuine ore of copper; the other the bones of animals tinged to a beautiful blue colour, by having been buried in places where copper ore has been near them.

Composition of hard Glass, or Paste, resembling the TURQUOISE STONE.

“Take of the compositions for blue glass, or paste, No 7 or 8, being those resembling the eagle marine, ten pounds; of calcined bone, horn, or ivory, half a pound. Powder and mix them well, and then fuse them in a moderate heat, till they be thoroughly incorporated.”

TURDUS, in ornithology, a genus of birds, the beak of which is of a conic form, and straight, only somewhat bent on the upper part, and has no membrane at the base: the tongue is lacerated and emarginated. Under this genus are comprehended the black-bird, thrush, red-wing, &c.

TURDUS, in ichthyology, the name by which authors call the green labrus, with a blue line on each side; a very beautiful fish, from eight to fourteen inches in length, and considerably thick in proportion.

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TURF, a blackish, sulphureous earth, used in several parts of England, Holland, and Flanders, as fuel. In Flanders, their turf is dry or pared from off the surface of the earth, and cut in form of bricks.—The sedge, or species of grass growing very thick on the turf earth, contribute greatly, when dry, to the maintenance of the fire. The Dutch take their turf from the bottom of the dykes or canals which run across most of their lands; by which means they not only supply the defect of wood, which is very great in most of the United Provinces, but also keep their dykes clear and navigable: this turf earth is very black. As they take it up from the bottom of the dykes, they spread it about the edges, of such a thickness, as that it may be reduced to three inches when moderately dried.—In this condition they cut it into pieces of turfs seven or eight inches long, and three broad, and, to complete the drying, lay them up in heaps, and at last in stacks.

In the north of England, Scotland, &c. turf is dug out of soft, moist, rotten earth, called peat-moss. They dig horizontally from the surface to the depth or about four feet, with a spade, which at once fashions and takes them out in parallelopipeds nine or ten inches long, and three square; which are spread on the ground to drain as fast as dug; and then set up an end three or four against each other, for the wind to blow through them; and at last they are stacked or housed. The pits or dykes in a few years fill up again, and afford a fresh crop.

TURFING-SPADE, among husbandmen, an instrument used to under-cut the turf, after it is marked out with a trenching plough.

TURGESCENCE, TURGESCENCY, a swelling or growing bloated.

* TURIN, Siege of, and battle at. This famous enterprize happened in the year 1706. The French king, after the loss of the battle at Ramillies, thought proper to call the duke de Vendome from Italy, and place him in Flanders, opposite the duke of Marlborough, and send to Italy the duke of Orleans to command the army, under the tutorage and direction of marechal de Maffin. They were ordered to besiege Turin, which was accordingly invested in the month of May, and the operations carried on till the beginning of September. Great preparations had been made for

for this siege. It was not undertaken till the duke of Savoy had rejected all the offers of the French monarch, which were sufficient to have shaken a prince of less courage and fortitude. The duke de la Feuillade having finished the lines of circumvallation and contravallation, sent his quarter-master general with a trumpet to offer passports and a guard for the removal of the duchess and her children. The duke of Savoy replied, that he did not intend to remove his family, and the marechal might begin to execute his master's orders whenever he should think fit. But when the siege began with uncommon fury, and the French fired red hot balls into the place, the two duchesses, with the young prince and princesses, quitted Turin and retired to Quierasco, from whence they were conducted, through many dangers, into the territories of Genoa. The duke himself forsook his capital, in order to put himself at the head of his cavalry, and was pursued from place to place by forty five squadrons, under the command of the count d'Aubetterre. Notwithstanding the very noble defence which was made by the garrison of Turin, who destroyed fourteen thousand of the enemy during the course of the siege, the defences were almost ruined, their ammunition began to fail, and they had no prospect of relief but from prince Eugene, who had numberless difficulties to encounter before he could march to their assistance. The duke de Vendome, before he left Italy, had secured all the fords of the Adige, the Mincio and the Oglio, and formed such lines and entrenchments, as he imagined would effectually hinder the Imperial general from arriving in time to relieve the city of Turin. But the prince surmounted all opposition, passed four great rivers in despite of the enemy, and reached the neighbourhood of Turin on the thirteenth day of August. There being joined by the duke of Savoy, he passed the Po between Montcalier and Cavignan. On the fifth day of November, they took a convoy of eight hundred loaded mules, the next day they passed the Doria, and encamped with the right on the bank of the river before Pianassa, and the left on the Stura before Veneria. The enemy were entrenched, having the Stura on their right, the Doria on their left, and the convent of capuchins in their center. When prince Eugene approached Turin the duke of Orleans proposed to march out of the en-

trenchment and give him battle, and this proposal was seconded by all the general officers except Marfin, who, finding the duke determined, produced an order from the French king, commanding the duke to follow the marechal's advice. The court of Versailles was now become afraid of hazarding an engagement against those who had so often defeated their armies; and this officer had private instructions to keep within the trenches. On the seventh day of November, the confederates marched up to the entrenchments of the French in eight columns, through a terrible fire from forty pieces of artillery, and were formed in order of battle within half cannon shot of the enemy. Then they advanced to the attack with surprising resolution, and met with such a warm reception, as seemed to stop their progress. Prince Eugene perceiving this check, drew his sword, and putting himself at the head of the battalions near the left, forced the entrenchments at the first charge. The duke of Savoy met with the same success in the centre, and on the right. The horse advanced through the intervals of the foot, left for that purpose, but they did not stop there, nor form themselves according to the disposition that had been made: on the contrary, several troopers that had entered precipitately, continued pursuing and pushing the enemy. General Islebach, who served in the second line, and who was to support the brigade of Wirtemberg, detached from his own brigade the regiment of Stahrenberg under colonel Haindi, and caused him to post himself on the entrenchment, with orders to turn the enemies cannon against themselves, and not to abandon that post, happen what would. This was executed very seasonably; for that regiment had hardly posted itself, when the enemy, who fled, faced about, repulsed part of the German horse, and penetrated through the Prussian foot, because the Imperial foot had moved to the right to make an overture. But the regiment of Stahrenberg supported the Prussians with so great bravery, that the enemy were forced to give ground, and by that means the Prussians had time to put themselves in order again. In the mean while, the horse of the left wing advanced, and all together put the enemy a second time to the rout. At the same time, baron Rhebinder had likewise forced the entrenchments: but the prince of Saxe Gotha met with greater obstacles, being obliged

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for an hour and a half to endure a great fire; because he made his attack by Lucenta, which post the enemy were at hand to defend. His highness stood it however, with extreme bravery, and gallantly repulsed the enemy's horse, who had made an opening for themselves on the left wing; in the mean time, the enemy reinforcing themselves more and more, baron Kirchbaum and count Harsch supported vigorously the prince of Saxe Gotha; while baron Hefbach, with general Boneval, punctually executing their orders, entered into action likewise with the enemy. During this fight near Lucenta, where was the head bridge of the enemy, a cassine was forced, and a battalion in it made prisoners. The allies lodged themselves in the cassine, and took post on the right and left towards the entrenchment, to observe Lucenta, in case the enemy should have caused any troops to advance on the other side of the Doria. But orders were sent to the foot of the right wing not to attack Lucenta, that the men might be spared, because it was perceived the enemy were betaking themselves to flight. While the right wing was hotly engaged, the allies continued to repulse the enemy on the side of the Stura with great vigour: but these again rallying by forming a line, and having to deal only with cavalry, in a long and spacious ground, their horse were obliged to wait till the foot came up with the cannon. Then they renewed the charge, and put the enemy again into such disorder, that, though they had behind their line another entrenchment with several redoubts, and many cassines well fortified, they were driven from one to the other, quite to their bridge on the Po, and all yielded at discretion. the allies beat them likewise out of Lucenta, in which was a great magazine of meal, bread and biscuit; and forced them to abandon their bridge on the Doria. But they having set fire to Lucenta, a great part of the provisions was consumed. The remainder however, with what was found besides in their camp, amounted to three thousand sacks of corn and meal, and two thousand sacks of biscuit. Thus the allies became masters of all the enemies camp between the Stura, the Po, and the Doria: but it ought not to be omitted, that before the enemy were entirely put to the rout, the garrison of Turin sallied out upon them with a gallantry that cannot be expressed. The allies took in the camp thirty-nine field-

pieces, and all the tents, with what was in them. In the mean time, though the enemy were entirely beaten, they continued to batter the place till towards night, when they were forced to abandon their approaches, with all their cannon, mortars, ammunition, and furniture of war. But in their flight they set fire to several magazines of powder, bombs, and grenades, which they had in divers places, and blew them up one after the other. The marshal de Marfin, who received a mortal wound in the battle, desired their highnesses to send him a guard for his security, in the house where he was laid, which was immediately granted.

These princes already found themselves in possession of above one hundred pieces of cannon large and small, with a great number of prisoners, among whom were five or six generals; besides several standards, colours, kettle drums, and other implements of war; without reckoning the booty they made of a great quantity of baggage, and the horses of ten or twelve regiments of dragoons, who had alighted, and were obliged to abandon them. On the side of the allies were lost colonel Hoffman, the prince of Bevern, and lieutenant colonel Neistein of Wirtemberg. The majors-general Kirchbaum, Stillen, and Haghen, with the colonels Reidt, Salmut, and another of the Prussians were wounded. Besides these, they had many inferior officers killed or wounded. This great action lasted till night, because of the entrenchments, redoubts, and fortified cassines, whence they were obliged to beat the enemy successively. The night was the more favourable to them for their flight, because the victorious troops had great need of rest. However, they did not neglect to send several detachments in pursuit of them, referring to the next day the taking of other measures. All the generals, after the example of their highnesses, as also the officers and soldiers, did on this occasion all that could be expected from brave warriors. It is easy to conjecture what difficulties they had to surmount, as well by the height of the entrenchments, as because the foot could not break in till after they had levelled it, to open a way for the horse. The generals of the foot, besides their usual valour, shewed admirable conduct in this bloody action. It is impossible to set forth the joy which this happy deliverance spread through the city of Turin, which was reduced to extremity; especially when their highnesses, after the action, entered it

to render thanks to God in the cathedral. They were welcomed with a salvo of all the artillery, in which the little powder that was left was spent. On this occasion sufficient praise cannot be given to count Thaur, who sustained the siege three months, and defended this capital with great valour and conduct, repelling to the last the assaults of the enemy. It is certain, that had he been better provided with ammunition, the enemy had advanced slower, and their highnesses might have taken other measures; but in the situation of things at that time, succour was not to be deferred a moment. The army encamped that night on the field of battle, the right wing towards the Old Park, and the left towards Lucenta. The eighth, upon advice received, that the enemy were marching on the great road of Orbassan to Pignerol, and that their troops under general Albergatti took the same route, his royal highness and prince Eugene went to discover them on an eminence near Valentine, and perceived that they had actually passed the Po over their bridge at Cavaretta, to which they set fire: but the Imperialists got thither in good time to extinguish it, and preserve the bridge. Several detachments were made to observe the enemy during their retreat, and to execute divers orders. There arrived in the camp of their highnesses a great number of prisoners, deserters, and baggage; and they were still more and more informed of the great confusion and loss sustained by the enemy. Marshal de Marfin, died that day, being stifled by the blowing up of some powder in the room where he lay wounded; and count Harach was dispatched to carry the news of this great victory to Vienna. The ninth, several other prisoners were conveyed to the camp, with a great quantity more of baggage taken from the enemy, who had likewise left behind them all their cannon in the mountains beyond Turin. The detachments, and especially that of the marquis de Langallerie, took many prisoners from the enemy. It now appeared that the French had about one thousand eight hundred men killed; and the allies near as many: that the latter had taken six thousand prisoners, one hundred and ten pieces of large artillery, above fifty field pieces, five thousand six hundred bombs, above fifteen thousand grenades, forty-eight thousand cannon balls, four thousand chests of musket-bullets, &c. eighty-six thousand barrels of powder, of

one hundred weight each, a prodigious quantity of implements and provisions for a camp, and all their tents, ten thousand horses, five thousand mules, and two thousand oxen; all the equipages of the generals, among which was a large quantity of plate, and four pictures, of the king of France set with diamonds, and valued at four thousand pistoles. The duke of Savoy reserved to himself only the artillery, the ammunition, the colours, and the kettle-drums, and the horses to remount his cavalry: all the rest of the booty was abandoned to the soldiers. Prince Eugene was content with the glory of having saved an ally and a relation; and with thirty-thousand men, harrassed by a long and painful march, beat an army of eighty thousand disciplined troops out of their entrenchments.

TURKEY, in ornithology, a genus of birds, the anterior part of the head of which is covered with a fleshy pendulous substance: the sides of the head also, and the throat, are covered with a papillous fleshy matter, and there is a longitudinal fleshy crest, of a redish, bluish, or purplish colour, and a soft substance. This is a large, but unwieldy bird; the head is strangely covered and ornamented with a pendulous, soft, fleshy substance, as already observed; the eyes are small, but bright and piercing; the wings are moderately long, though not at all formed for supporting so large a bulk in long flights; they have each twenty-eight long feathers; the tail is long and large, the legs moderately long, and very robust. There is but one known species of this genus.

* **TURKEY**, a large empire, extended to part of Europe, Asia, and Africa. Some affirm it is 2000 miles in length from E. to W. and 1750 from N. to S. Turkey in Europe, is divided by the mountains of Castagnas into N. and S. the N. part comprehends Walachia, Moldavia, Bessarabia, Croatia, Bosnia, Dalmatia, Servia, Bulgaria, and Romania or Rumelia. The S. part contains ancient Greece, in which are seven large provinces, called Albania, Epirus, Macedonia, Janna, Livadia, the Morea, and the islands of the Archipelago. Turkey in Asia comprehends five large parts, namely Natolia, Georgia, Turcomania, Diarbeck and Suristan, or Syria. Constantinople is the capital of all Turkey. In general, the Turks are very sober in eating, lovers of rest and idleness; be-

sides, the frequent use of bathing cannot but weaken them, and render them effeminate. They are charitable towards strangers, let their religion be what it will, and no nation suffers adversity with greater patience than they. The grand seignior is absolute master of all the goods and possessions of his subjects, inasmuch that they are all little better than slaves. The titles he assumes are God upon earth, the shadow of God, the brother of the sun and moon, the disposer of crowns, and the like. The Turks have always very numerous armies on foot, the chief of which are the Janizaries, who have been bred in the Seraglio, and have been used to military discipline from their infancy. Of these they have always 25,000. The religion of the Turks has great affinity to that of the Jews; for they believe in one God, and that his prophet is Mahomet, as the Jews affirmed Moses to be. They observe the same rules in eating and drinking and, they hold hog's flesh in great abhorrence as well as the Jews. The chief difference consists in ablution, frequent prayers, and repeated bathings; for with regard to plurality of wives, they are very much alike, only the Jews conform in a great measure to the custom of the country they inhabit, in that respect. We shall say nothing of the trade in general, because in so extensive an empire it must be quite different in different parts. However, we may observe that the Turks themselves are not very industrious, and that the numerous Christians and Jews that live among them, are most addicted to traffic and mechanic employments.

TURMERIC, a small tuberous knotty root, brought from the East Indies; externally greyish, internally of a deep lively yellow or saffron colour, which by age changes more and more towards a red. Two sorts are mentioned by authors, one longish, the other roundish: only the first is met with in the shops. —Turmeric has a slight, aromatic, and not very agreeable smell; and a bitterish somewhat warm taste. It readily gives out its active matter both to aqueous and spirituous menstrua: to the former it communicates its own deep yellow, to the latter a fine yellowish red tincture. In distillation with water, it yields a small quantity of a gold coloured essential oil, of a moderately strong smell and a pungent taste; the remaining decoction, inspissated, leaves a bitterish, considerably saline mass. Rectified spirit elevates little,

or nothing of its virtues; all the active parts of the root being left behind in the inspissated extract, which is moderately warm, and bitter, and not a little nauseous. This root is said to be in general use in the Eastern countries, both for the colouring and seasoning of food, and as a medicine: it is accounted one of the most effectual remedies in obstructions of the viscera and mesentery, which are there frequent; in uterine disorders, difficulties of urine, and affections of the kidneys. Among us it has been employed also as a deobstruent, and esteemed by some a specific in the jaundice: the dose in substance is from a scruple to a drachm; in decoction or infusion, twice as much. It tinges the urine of a deep yellow colour. The spirituous tincture of turmeric applied upon warm marble, gives a durable red stain. Woollen cloth, impregnated with a solution of alum and tartar, acquired on being boiled with the watery decoction, an elegant, but not very durable orange yellow or gold coloured dye. It is rarely made use of by the dyers on account of its price and the perishableness of its colour.

TURNADO, or **TORNADO**, a wind which on some coasts blows all night from the shore.

TURNAMENT, or **TOURNAMENT**, a martial sport, or exercise, which the ancient cavaliers used to perform to shew their bravery and address. The first turnaments were only courses on horseback, wherein the cavaliers tilted at each other with canes, in manner of lances; and were distinguished from jousts, which were courses or carcers, accompanied with attacks and combats with blunted lances and swords. Others say, it was a turnament when there was only one quadril or troop; and that where there were several to encounter each other, it was a joust. — But it is certain the two became confounded together in process of time; at least we find them so in authors.

The prince who published the turnament, used to send a king at arms with a safe-conduct, and a sword to all the princes, knights, &c. signifying, that he intended a turnament and a clashing of swords, in the presence of ladies and damsels: which was the usual formula of invitation. They first engaged man against man, then troop against troop; and after the combat, the judges allotted the prize to the best cavalier, and the best striker of swords; who was, accordingly,

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conducted in pomp to the lady of the tournament; where, after thanking her very reverently, he saluted her, and likewise her two attendants. These tournaments made the principal diversion of the thirteenth and fourteenth centuries. Munster says, it was Henry the Fowler, duke of Saxony, and afterwards emperor, that first introduced them; but it appears from the chronicle of Tours, that the true inventor of this famous sport, was one Geoffry, lord of Preuilli, about the year 1066.

Pope Eugenius II. excommunicated those who went to tournaments, and forbade them burial in holy ground. King Henry II. of France died of a wound received at a tournament. One Chiaoux, who had assisted at a tournament under Charles the VIII. said very wisely, "If it be in earnest, it is too little; if in jest, too much."

It is to the exercise of tournaments that we owe the first use of armories: of which the name blazonry, the form of the escutcheons, the colours, principal figures, the mantlings, label, supporters, &c. are undeniable evidences.

TURNING, a branch of sculpture, being the art of fashioning hard bodies, as brass, ivory, wood, &c. into a round or oval form, in a lathe.

Turning is performed by putting the substance to be turned upon two points as an axis, and moving it round on that axis; while an edge-tool, set steady to the out side of the substance in a circumvolution thereof, cuts off all the parts which lie farther off the axis, and makes the outside of that substance concentric to the axis. See *Lathe*.

The invention of turning seems to have been very ancient. Some, indeed, to do honour to the age, will have it brought to perfection by the moderns; but, if what Pliny and some other ancient authors relate, be true, that the ancients turned those precious vases enriched with figures and ornaments in relief, which we still see in the cabinets of the curious, it must be owned that all that has been added in these ages, makes but a poor amends for what we lost of the manner of turning of the ancients.

The lathe, or principal instrument used in turning, is composed of two wooden cheeks, or sides parallel to the horizon, having a groove, or opening between them; perpendicular to these are two pieces, called heads or puppets, made to slide between the cheeks, and to be fixed down

at any point at pleasure: these have two points or center pins, between which the piece to be turned is fastened by the help of a screw. There is also a square piece of wood called a rest, which bears up the tool, and keeps it steady. The piece is turned round backwards and forwards, by means of a string put round it, and fastened above to the end of a pliable pole, and below to a treddle or board moved by the foot. This is the common lathe; but there is another used in hollow turning, &c. very different from it.

This lathe is composed like the other of two cheeks, and has also two heads fitted to slide between them; but has no pole, being turned by means of a wheel and pulley. The pulley is fastened on a kind of spindle called a mandrel, one end of which is pointed, and received into the center of the back screw, which goes through one of the heads; and near the other end, called the verge, it moves in a piece called the collar; the end of the mandrel passes through the collar, and on it the piece to be turned is fastened.

TURNING-EVIL, in cattle, a disease that causes them frequently to turn round in the same place. It is also called the sturdy. The common remedy, recommended by Mr. Markham, is to throw the beast down, and bind him; then to open his skull, and take out a little bladder, filled with water and blood, which usually lies near the membrane of the brain, and then gradually heal the wound.

TURNIP, or **TURNER**, in botany, an esculent plant, of which there are three species enumerated by Miller. The first is the turnip which is commonly cultivated in the fields, of which there are the following varieties, viz. the round red or purple topped turnip, the green topped turnip, the yellow turnip, the black rooted turnip, and the early Dutch turnip. The last sort is commonly sown early in the spring, to supply the markets in May and June, but is never cultivated for a general crop. The red rooted turnip was formerly more cultivated in England than at present; for since the large green topped turnip has been introduced, all the skilful farmers prefer it to the other sorts; the roots of the green will grow to a large size, and continue good much longer than the other sorts. The next to this is the red or purple topped turnip, which will also grow large, and is extremely good for some time; but the

roots

roots of this will become stringy much sooner than those of the green topped. The long rooted turnip, the yellow turnip, and the blackish rooted turnip are now rarely cultivated in England, neither of them being so good for the table or for feed, as the red and green topped turnip, though there are some few persons who sow them for the sake of variety. The French turnip is not much cultivated in England, but in France and Holland they are in great esteem, especially for soups; their roots being small, are boiled whole in the soup, and so served up to the table; these must be used while they are young, otherwise they will become rank and stringy.

The best turnip seeds are obtained from the largest roots, which may either be transplanted for that purpose, or marked out in the field where they were sown. Those which are commonly sold in the shops, seldom produce the finest plants.

TURNPIKE, a gate set up across a road, watched by an officer for the purpose, in order to stop travellers, waggons, coaches, &c. to take toll of them towards repairing or keeping the roads in repair. Justices of the peace, and other commissioners, are authorized to appoint surveyors of the roads, and collectors of toll, which is usually 1s. or 6d. for a coach or waggon, and 1d. for a horse, &c.

By an act of parliament passed in 1774, in the 14th year of the reign of George III. it is enacted, that toll-gatherers at a turnpike, shall not to pay the poor, or any other parish rate; nor shall they obtain a settlement in the parish by keeping such turnpike. They are also prohibited from selling spirituous liquors, &c.

TURNSOLE, or **TORNSOLE**, *Heliotropium*, in botany, a genus of plants whose flower is monopetalous and saucer-shaped; the tube is the length of the cup; the limb is plane, divided lightly into five segments, and obtuse: the smaller segments stand alternate and are acute; the larger are placed between: the mouth is closed by five prominent squamulae, joined in the form of a star; there is no pericarpium, the calyx remains unaltered, and contains four oval acuminate seeds.

TURPENTINE, in the materia medica, a native balsam, or resinous juice of certain trees, flowing either naturally or by incision. Four kinds of turpentine are distinguished in the shops.

TURRITIS, tower mustard, in botany, a genus of plants: the empalement of the flower is composed of four oblong oval leaves, which close together. The flower has four oblong, oval, entire petals, placed in form of a cross, and six erect awl-shaped stamina the length of the tube, two of which are shorter than the other, terminated by single summits, and a taper germen a little compressed, having no style, but is crowned by an obtuse stigma. The germen afterwards becomes a long four cornered pod with two cells, which are divided by an intermediate partition, opening with two valves, and filled with small, roundish, indented seed.

TURUNDA, in medicine and surgery, denotes a tent, pallet, or pencil; or a piece of lint thrust into a wound, ulcer, &c.

TURTLE, in ichthyology, a name given to some species of the testudo, as the hawk's bill turtle is the testudo with acuminate unguis, four on the hinder as well as the fore feet; the green turtle, or the testudo with two unguis on the fore feet, and one on the hinder; and the long headed turtle, or the great oval headed testudo. See *Testudo*.

TURTLE-DOVE, in zoology a beautiful little bird of the pigeon kind. The head, neck, and back, are of the bluish grey colour of the common pigeon, with some mixture of a redish brown near the rump, and at the bottom of the neck. Its breast and belly are white; but its throat of a fine bright purple; and the sides of the neck are variegated with a sort of ringlet of beautiful white feathers, with black bases. It feeds on hempseed, and other vegetable matters.

TURTLE-SHELL, in natural history, the name given by the collectors of shells to a very beautiful species of *murex*, common in the cabinets, but not found any where on the shores. This is owing to its having greatly altered its appearance in the polishing; for it is no other than the white and brown mouthed *murex*, which is common in its rough state, with its outer coat taken off.

TUSCAN ORDER, in architecture, the first, simplest, and most massive of the five orders. See plate XXXVIII. fig. 2.

The Tuscan order takes its name from an ancient people of Lydia, who coming out of Asia to people Tuscany, first executed it in some temples, which they built in their new plantations.

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The Tuscan is called the rustic order by Vitruvius, and M. de Cambray agrees with him, who in his *Parallel* says, it never ought to be used but in country houses and palaces. M. Le Clerc adds, that in the manner Vitruvius, Palladio, and some others, have ordered it, it does not deserve to be used at all. But in Vignola's manner of composition, he allows it beauty, even in its simplicity, and such as makes it proper, not only for private houses, but even for public buildings, as in the piazzas of squares and markets, in the magazines and granaries of cities, and even in the offices and lower apartments of palaces.

The Tuscan has its character and proportions as well as the other orders; but we have no ancient monuments to give us any regular Tuscan pillar for a standard. M. Perrault observes, that the characters of the Tuscan are nearly the same with those of the Doric, and adds, that the Tuscan is in effect no more than the Doric made somewhat stronger, by shortening the shaft of the column; and simpler, by the small number, and largeness of the mouldings. See *Doric*.

Vitruvius makes the whole height of the order fourteen modules, in which he is followed by Vignola, M. Le Clerc, &c. Serlio makes it but twelve. Palladio gives us but one Tuscan profile, much the same as that of Vitruvius, and another too rich, on which side Scamozzi is likewise too faulty. Hence it is, that that of Vignola, who has made the order very regular, is most followed by the modern architects.

Of all the orders, the Tuscan is the most easily executed, as having neither triglyphs nor dentils, nor modillions to cramp its intercolumns. On this account, the columns of this order may be ranged in any of the five manners of Vitruvius, viz. the pycnostyle, systyle, eustyle, diastyle, and aræostyle.

TUSCAN Order by Proportions of equal Parts. The height of the pedestal being two diameters, is divided into 4, giving 1 to the base, whose plinth is $\frac{2}{3}$ thereof; the other part is divided into three, giving 1 to the fillet, and 2 to the hollow. The breadth of the die or naked is one diameter and $\frac{1}{2}$, and the projection of the base is equal to its height, the fillet hath three fourths thereof. The height of the cornice is $\frac{1}{2}$ the base, being one eighth of the whole height, and is divided into 8, giving 2 to the hollow, 1 to the fillet, and 5 to the band; the projection is equal to

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the base, and the fillet hath three of these parts. Base of the column: the height is one half a diameter, and is divided into six parts, giving 3 to the plinth, 2 and $\frac{1}{2}$ to the torus, and $\frac{1}{2}$ a part to the fillet; the whole projection is one third of its height. The hollow, or cincture, is one fourth of a circle, in all the orders, and belongs to the shaft of the column.

The diminishing of this column is $\frac{1}{4}$ of the diameter, and is divided into 9, giving $2\frac{1}{2}$ to the frieze of the capital, half a part to the fillet, 3 to the ovolo, and 3 to the abacus. The whole projection is one eighth of the diameter, being perpendicular to the body of the column below, and the fillet projects equal to its height. The collerino, or necking of all the orders in general, is one of those nine parts in the capital, and the fillet half a part, the projection is one and one fourth of these parts, and the fillet equal to its height. The height of the entablature being one diameter and $\frac{1}{2}$, is divided into 6, giving two to the architrave, $1\frac{1}{2}$ to the frieze, and $2\frac{1}{2}$ to the cornice.

For the members of the architrave, divide the height into seven parts, giving $2\frac{1}{2}$ to the first face, $3\frac{1}{2}$ to the second, and 1 to the band at top. The projection is equal to the band, and the second face a third thereof. The first face of all the architraves is perpendicular to the naked of the column at the top. For the cornice, divide the height into 9, giving $1\frac{1}{2}$ to the hollow, half to the fillet, $1\frac{1}{2}$ to the ovolo, 2 to the corona, half a part to the fillet, 2 to the scima recta, and 1 to the fillet. For the projections, the hollow hath 2 of these parts, the ovolo $3\frac{1}{2}$, the corona 6, the fillet 6, and the whole 9 being equal to the height. See the figure.

* **TUSCANY**, Duchy of, a state of Italy, bounded on the E. and N. by the territories of the pope, on the W. by Lucca and Genoa, and on the S. by the Tuscan sea. It is about 100 miles in length, and nearly the same in breadth. It is watered by several rivers, of which the Arno is the principal. Many parts of the country abound in corn, wine, oil, oranges, citrons, figs, and other excellent fruits. No country is better planted with mulberry trees, whose leaves nourish a vast number of silk-worms, whereby the natives are enabled to make the richest silks. Tuscany is divided into three parts, Florentino, Pisano, and the Siennese; besides which, there are four or five small islands. The last grand

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duke of the house of Medicis died in 1737, without leaving any male heirs; and by the treaty of London, concluded in 1718, the emperor Charles VI. promised Tuscany, as a fief of the empire, to don Carlos, infant of Spain, as being the next heir; but this prince, impatient of becoming master thereof, obliged the Florentines, in 1731, to do him homage, before the death of the grand duke, and without the consent of the emperor. A war breaking out in Italy, don Carlos made himself master of the kingdom of Naples and Sicily, and the possession of them was confirmed to him by the peace in 1735. But he was obliged to renounce his claim to the duchy of Tuscany in favour of the late emperor of Germany, then duke of Lorraine, to whom this country was ceded as an equivalent for the duchy of Lorraine, which he had given up to France. The Tuscan sea is that part of the Mediterranean which lies between Tuscany, the territories of the pope, the kingdom of Naples, and the islands of Sicily, Sardinia, and Corsica.

TUSSILAGO, colt's-foot, in botany, a genus of plants, the flower of which has one common cylindrical empalement, whose scales are linear, spear-shaped, and equal. The flower is made up of hermaphrodite florets, which compose the disk, and female half florets, which form the rays or border. The hermaphrodite florets are funnel-shaped, cut at the brim into five segments; these have five short hair-like stamina, terminated by cylindrical summits, and a short crowned germen, supporting a slender style, crowned by a thick stigma. The germen afterwards becomes an oblong compressed seed, crowned with a hairy down. The female half-florets are stretched out on one side with a narrow tongue-shaped segment; these have no stamina, but have a short crowned germen, which turns to a seed like those of the hermaphrodite florets, which ripen in the empalement.

There are three species of colt's-foot, the first of which is very common in watery places in almost every part of England, and is rarely kept in gardens; for the roots creep under ground, and increase so fast, that in a short time they will spread over a large spot of ground.

The second sort grows naturally in Siberia; this is a very low plant, whose leaves grow close to the ground, of an oval form, indented on the sides like a lute. The flowers stand upon short foot-

stalks, which rise between the leaves, each sustaining one flower at the top, of a dirty purplish colour. These are succeeded by downy seeds.

The third sort grows naturally on the Alps; this is a low perennial plant, whose leaves are round, indented at the foot-stalk in form of a heart; their edges are crenated; their upper surface is smooth, of a bright green colour; their under sides are a little downy and whitish. The foot-stalks of the flowers, which arise from the root, sustain one purplish flower at the top, which is made up of hermaphrodite and female florets, like those of the other sorts.

The two last are frequently kept in gardens for the sake of variety: they are easily propagated by parting their roots in autumn, and must be planted in a moist shady border, where they will thrive, and require no farther care but to keep them clean from weeds.

The leaves and flowers of colt's-foot, in taste somewhat mucilaginous, bitterish, and roughish, and of no remarkable smell, are ranked among the principal pectoral herbs. Infusions of them, with a little liquorice, or with the other herbs of similar intention, are drank as tea, and sometimes with considerable benefit, in catarrhus disorders, and coughs threatening consumptions.

TUTELARY, one who has taken something into his patronage and protection. It is an ancient opinion, that there are tutelary angels of kingdoms and cities, and even of particular persons, called guardian angels. The ancient Romans, it is certain, had their tutelary gods, whom they called *Penates*. And the Romish church to this day hold an opinion not much unlike it: they believe that every person, at least every one of the faithful, has, from the time of his birth, one of those tutelary angels attached to his person, to defend him from all temptations; and it is on this, principally, that their practice of invoking angels is founded.

TUTOR, in the civil law, one chosen to look to the person and estate of children left by their fathers and mothers in their minority.

TUTOR, is also used in our universities for a member of some college or hall, who takes on him the instruction of some young students in the arts or faculties.

TUTORAGE, in the civil law, a term equivalent to guardianship in the common law, signifying an office imposed on

on any one to take care of the effects of one or more minors.

TUTTY, an argillaceous ore of zinc, found in Persia, formed on cylindrical moulds into tubulous pieces like the bark of a tree, and baked to a moderate hardness; generally of a brownish colour, and full of small protuberances on the outside, smooth and yellowish within, sometimes whitish, and sometimes with a bluish cast. Like other argillaceous bodies, it becomes harder in a stronger fire; and after the zinc has been revived and dissipated by inflammable additions, or extracted by acids, the remaining earthy matter affords, with oil of vitriol, an aluminous salt.

Tutty, levigated into an impalpable powder, is, like the lapis calaminaris and calces of zinc, an useful ophthalmic, and frequently used as such in ointments and collyria. Ointments for this intention are prepared in the shops, by mixing the levigated tutty with so much vipers fat as is sufficient to reduce it to a due consistence, or by sprinkling half an ounce of the powder into two ounces of fresh butter and a dram of white wax liquified together, to which is occasionally added a dram or two of camphor.

TWELFTH-DAY, or **TWELFTH-TIDE**, the festival of the Epiphany, or manifestation of Christ to the Gentiles; so called, as being the twelfth day, exclusive, from the Nativity or Christmas day.

TWILIGHT, that light, whether in the morning before sun-rise, or in the evening after sun-set, supposed to begin and end when the least stars that can be seen by the naked eye cease, or begin to appear.

Hence it is, that during that part of the year in which the sun is never eighteen degrees below our horizon, there is a continued twilight from sun-setting to sun-rising. Now that part of the year in the latitude of London, is while the sun is passing from about the fifth degree of Gemini to the twelfth of Cancer; that is, from about the 26th of May to the 18th of July.

As the twilight depends on the quantity of matter in the atmosphere fit to reflect the sun's rays, and also on the height of it, for the higher the atmosphere is, the longer will it be before the upper parts of it will cease to be illuminated, the duration of it will be various. For instance, in winter, when the air is condensed with cold, and the atmosphere

upon that account lower, the twilight will be shorter; and in summer, when the limits of the atmosphere are extended by the rarefaction and dilatation of the air, of which it consists, the duration of the twilight will be greater. And for the like reason, the morning twilight, the air being at that time condensed and contracted by the cold of the preceding night, will be shorter than the evening one, when the air is more dilated and expanded.

TWINS, two young ones delivered at a birth, by an animal which usually brings forth but one.

TWINS, in astronomy, the same with Gemini. See *Gemini*.

TWIST, the inside or flat part of a man's thigh, upon which a true horseman rests when on horseback.

TYCHONIC SYSTEM, or **HYPOTHESES**, an order or arrangement of the heavenly bodies, of an intermediate nature between the Copernican and Ptolemaic, or participating alike of them both.

TYGER, or **TIGER**, in zoology. See **TIGER**.

TYLE, or **TILE**, in building, a sort of thin fictitious, laminated brick, used on the roofs of houses; or more properly a kind of fat clayey earth, kneaded and moulded of a just thickness, dried, and burnt in a kiln like a brick; and used in the covering and paving of houses. See *Brick*.

TYLE, in assaying, a small flat piece of dried earth used to cover the vessels in which metals are in fusion.

TYLER, one that covers, or paves with tyles.

TYLER, **WAT**, the rebel, was killed by Walworth, lord mayor of London, in 1381.

TYMPAN, or **TYMPANUM**, in architecture, the area of a pediment, being that part which is in a level with the naked of the frieze. Or it is the space included between the three corniches of a triangular pediment, or the two corniches of a circular one.

Sometimes the tympan is cut out, and that part filled with an iron lattice to give light, and sometimes it is enriched with sculpture in bass-relievo.

TYMPAN, among joiners, is also applied to the panells of doors.

TYMPAN of an *Arch*, a triangular space or table in the corners or sides of an arch, usually hollowed, and enriched sometimes with branches of laurel, olive-tree, or oak, or with trophies, &c.

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sometimes with flying figures, as Fame, &c. or sitting figures, as the cardinal Virtues.

TYMPAN, among printers, a double frame belonging to the press, covered with parchment, on which the blank sheets are laid in order to be printed off. See *Printing*.

TYMPANUM, or **TYMPAN**, in mechanics, a kind of wheel placed round an axis or cylindrical beam; on the top of which are two levers or fixed staves, for the more easy turning the axis, in order to raise a weight required. The tympanum is much the same with the peritrochium, but that the cylinder of the axis of the peritrochium is much shorter, and less than the cylinder of the tympanum.

TYMPANUM of a Machine, is also used for an hollow wheel, wherein one or more people, or other animals, walk, to turn it; such as that of some cranes, calenders, &c.

TYMPANUM, a drum. See *Drum*.

TYMPANUM, in anatomy, the middle part of the ear. See *Ear*.

TYMPANY, in medicine, a flatulent tumour or swelling of the abdomen or belly, very hard, equable and permanent, whereby the skin is stretched so tight, that when struck it gives a sound like that of a drum.

TYPE, a copy, image, or resemblance of some model. The word is formed from the Greek, *τυπος*, form, figure.

The term type is less in use than its compounds prototype and archetype, which are the originals that are made without models.

TYPE, a scholastic term much used among divines, signifying a symbol, sign, or figure of something to come. In this sense the word is commonly used with relation to antitype, which is the thing itself, of which the other is a type or figure.

Thus, Abraham's sacrifice, the paschal lamb, &c. were types or figures of our redemption; and the brazen serpent was a type of the cross, &c.

Types are not mere conformities, or analogies, which the nature of things holds forth between them; nor arbitrary images arising merely from the casual resemblance of things; but there is further required a particular institution of God to make a type; and a particular declaration of his that it is so.

TYPE, among letter-founders and printers, the same with letter. See *Letter*, and *Letter-founder*.

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TYPE is also used to denote the order observed in the intention and remission of fevers, pulses, &c.

TYPHA, in botany, a genus of plants having no corolla: the male flowers are arranged into a cylindrical amentum; the female flowers form also a cylindrical amentum below the male ones: there is no pericarpium, the fruit growing together in great numbers, constitutes a cylinder, in each of which there is a single ovated seed, furnished with a style, and standing upon a seta, which seta stands on a capillary pappus.

TYPHODES, in medicine, a kind of ardent or burning fever usually attending on erysipelas of any of the viscera.

TYPHOMANIA, in medicine, a disorder of the brain, wherein the patient not being able to sleep, though greatly inclined thereto, lies with his eyes shut, talks absurdly, and flings himself this way and that. The typhomania is a kind of combination of a frenzy with a lethargy, and is much the same with coma vigil.

TYPHON, in church history, a god of the ancient Egyptians. This people admitted two principles, the one good, the other bad. Isis, Osiris, and Orus were good gods, and Typhon the evil god. To this latter they imputed tempests, inundations, earthquakes, eclipses, and all misfortunes. The ass and the crocodile were his symbols; and he had divine honours paid him in that part of Egypt called Papremis. Typhon, according to Diodorus Siculus, was brother to Osiris, who reigned in Egypt with great justice and equity, but Typhon was a violent and cruel man. He killed his brother, and cut his body into twenty-six parts. But Isis, the wife of Osiris, and their son Orus, put Typhon to death, by drowning him in the river Orontes. The Typhæus of the Greeks is probably the same as the Egyptian Typhon.

TYPHON, or **TYPHÆUS**, in fabulous history, a giant of a prodigious size, was, according to Hesiod, the son of Erebus and Terra, or, according to Homer, of Juno, who being enraged at Jupiter's bringing forth Minerva without her assistance, struck the earth with her hand, and gave birth to Typhon, whose stature was prodigious. With one hand he touched the East, and with the other the West, while his head reached to the stars. His eyes were of fire, flame proceeded from his mouth and nostrils, his body

TYR

body was encircled with serpents, and his thighs and legs were of a serpentine form. He strove with the other giants to dethrone the gods, who, terrified at his appearance, fled into Egypt; but Jupiter struck him down with a thunderbolt, and threw mount Ætna upon him.

TYPOGRAPHY, the art of printing. See *Printing*.

TYRANT, among the ancients, denoted simply a king or monarch. But the ill use several persons invested with

TYT

that sacred character made of it, has altered the import of the word, and tyrant now carries with it the idea of an unjust and cruel prince, who invades the people's liberty, and rules in a more despotic manner than the laws of nature or the country admit of.

TYROCINIUM, a novice, or apprenticeship, in any art or science.

TYROSIS, a disorder of the stomach, proceeding from milk coagulated therein.

TYTHES, or **TITHES**. See *Tithes*.

U

VAC

U, The twentieth letter in the alphabet, and the fifth vowel. It seems to owe its origin to the V consonant, though it is as different a letter from that as E and F. It is formed in the voice by a round configuration of the lips, and a greater extrusion of the under one; the tongue is also more canulated than in forming the O; else other things are much the same. V is also a numeral letter, and signifies five; and with a dash at top, thus, $\bar{V}$, it signifies five thousand.

VACANCY, in philosophy. See *Vacuum*.

VACANCY, in law, a post, or benefice, wanting a regular officer or incumbent.

VACATION, in law, is the whole time betwixt the end of one term and the beginning of another. It is also applied to the time from the death of a bishop, or other spiritual person, till the bishopric, or dignity, is supplied with another.

VACCINUM, Billberry, Wortleberry, or Cranberry, in botany, a genus of plants, the flower of which has a small permanent empalement sitting upon the germen; it is bell-shaped, of one petal, slightly cut into four segments at the brim, which turn backward; it has eight stamina, terminated by horned summits, having two awns on their backside which spread asunder. The germen is situated below the flower, supporting a single style longer than the stamina, crowned by an obtuse stigma; it afterwards turns

VAG

to an umbilicated globular berry with four cells, containing a few small seeds.

VACUUM, **VACUITY**, in physics, a space empty or devoid of all matter, or body.

Whether there be any such thing in nature as an absolute vacuum, or whether the universe be completely full, and there be an absolute plenum, is a thing that has been controverted by the philosophers of all ages.

VACUUM BOYLEANUM is sometimes, though improperly, used to express the approach to a real vacuum, by means of an air pump. See *Air*, and *Pumps*.

VADE-MECUM, or **VENT-MECUM**, a Latin phrase, used, in English, to express a thing that is very handy and familiar, and which may be commodiously carried about by a person; chiefly applied to some favourite book.

VAGABOND, See *Vagrants*.

VAGINA, properly signifies a sheath, or scabbard; and the term vagina is used, in architecture, for the part of a terminus, because resembling a sheath, out of which the statue seems to issue.

VAGINA, in anatomy, a large canal, formed of a robust and strong membrane, and reaching from the external orifice, or os pudendi, in women, to the uterus.

VAGRANTS, in law, are described to be persons pretending to be parent-gatherers, or collectors for prisons, and wander about for that end; among which are included all fencers, bear-wards, common players of interludes, minstrels, jugglers; all persons pretending to be gypsies,

V A L

or wandering in the habits of such, or pretending skill in physiognomy, palmistry, or the like, or to tell fortunes; or such as use any subtle craft, unlawful games or plays; or, being able in body, run away, leaving their wives or children to the parish; all persons who cannot otherwise maintain themselves, that loiter about and refuse to work for the usual wages; and all other persons wandering abroad and begging, &c.

VAGUM, or **PAR VAGUM**, in anatomy, the eighth pair of the nerves arising from the medulla oblongata.

VAIR, in heraldry, a kind of fur, consisting of divers little pieces, argent and azure, resembling a Dutch-U, or a bell-glass.

Vairs have their point azure opposite their point argent, and the base argent to the base azure.

VALERIAN, in botany, a genus of plants, with channelled stalks; the leaves are in pairs, each leaf being composed of a number of long narrow sharp pointed segments, indented about the edges, of a dull green colour, set along a middle rib, which is terminated by an odd one; producing, on the tops of the stalks, umbel-like clusters of small monopetalous flowers, each of which is divided into five segments, set in a very little cup, and followed by a single naked seed winged with down: the root consists of tough strings with numerous smaller threads, matted together, issuing from one head, of a dusky brownish colour approaching to olive. It is perennial, and grows wild in dry mountainous places.

VALET, a French term, used as a common name for all domestic men servants, employed in the more servile offices, as grooms, footmen, coachmen, &c. But with us, it is chiefly used in the phrase *valet de chambre*, which is a servant whose office is to dress and undress his master, &c.

VALEUDINARY, among medical writers, denotes a person of a weak and sickly constitution, and frequently out of order.

VALID, in law, an appellation given to acts, deeds, transactions, &c. which are clothed with all the formalities requisite to their being put into execution, and to their being admitted in a court of justice.

VALUE, *Valor*, in commerce, denotes the price or worth of any thing: hence the intrinsic value denotes the real and effective worth of a thing, and is used

V A N

chiefly with regard to money, the popular value whereof may be raised and lowered, at the pleasure of the prince; but its real, or intrinsic value, depending wholly on its weight and fineness, is not at all affected by the stamp or impression thereon.

VALVE, *Valvula*, in hydraulics, pneumatics, &c. is a kind of lid, or cover of a tube or vessel, so contrived as to open one way, but which the more forcibly it is pressed the other way, the closer it shuts the aperture; so that it either admits the entrance of a fluid into the tube or vessel, and prevents its return; or admits its escape, and prevents its re-entrance. See *Pump*.

The word is formed from the Latin *valva*, folding doors.

VALVE, in anatomy, a thin membrane applied on several cavities and vessels of body to afford a passage to certain humours going one way, and prevent their reflux towards the place from whence they came.

VAN, **VANT** or **VAUNT**, from the French *avant*, or *avaunt*, signifying *before* or *foremost* of any thing; thus we say, the van-guard of an army, &c.

* **VANBRUGH**, **SIR JOHN**, a celebrated dramatic writer, and architect, was descended from a family in Cheshire, which came from France. He was born about the middle of the reign of Charles II. and received a liberal education. His first comedy, called the *Relapse*, or *Virtue in danger*, was acted in 1697 with great applause, which gave him such encouragement, that he wrote eleven more comedies. He was the friend of Mr. Congreve, whose genius was naturally turned for dramatic performances; and these two gave new life to the English stage, and restored its reputation, which had been some time sinking. Either the reputation Sir John gained by his comedies, or his skill in architecture, were rewarded with great advantages. He was appointed Clarencieux king at arms, which he afterwards disposed of. In 1716 he was appointed surveyor of the works at Greenwich hospital; he was likewise made comptroller-general of his majesty's works, and surveyor of all the gardens and waters. He was an able architect, but his performances in this science are esteemed heavy. Under his direction were raised Blenheim house in Oxfordshire, Claremont in Surry, and his own house at Whitehall. In some part of his life he went to France, where, being

ing prompted by his taste for architecture, to view the fortifications of the country, he was one day observed by an engineer, who informing against him, he was secured and sent to the Bastille; but he met with an easy confinement, and was soon after set at liberty. He died of a quinsy at his house at Whitehall, the 26th of March, 1716.

* VAN DYCK, Sir Anthony, a celebrated painter, was born at Antwerp in 1599, and giving early proofs of his excellent genius, became the disciple of the illustrious Rubens. While he lived with his master, Rubens having one night left a picture unfinished, went out, when his scholars taking the opportunity of playing about the room, one of them striking at his companion with a maul-stick, threw down the picture, which not being dry, received some damage. However, Van Dyck being at work in the next room, was prevailed on to try to repair the mischief. Rubens came the next morning to his work first, and going at a distance to view the picture, as is usual with painters, and having contemplated it a little, suddenly cried out, that he liked it much better than he did the night before. While Van Dyck lived with Rubens, he painted a great number of faces, and among the rest that of his master's wife. Afterwards he travelled into Italy, and having stayed a short time at Rome, removed to Venice, where he attained the beautiful colouring of Titian, Paul Veronese, and the Venetian school, which appeared from the many excellent pictures he drew at Genoa. After having spent a few years abroad, he returned to Flanders, with so noble, so easy, and so natural a manner of painting, that Titian himself was hardly his superior, and no other painter could equal him in portraits. On his return home, he performed several pieces of history, that rendered his name famous all over Europe; but afterwards applied himself to painting after the life, as the most advantageous branch of his profession. Du Fresnoy says, that of all the disciples of Rubens, many of whom were admirable, Van Dyck best comprehended the rules and general maxims of his master, that he even excelled him in the delicacy of his colouring. The prince of Orange sent for him to draw the pictures of his princess and children. Cardinal Richelieu invited him to France, where he stayed but a short time, and then came to England. King Charles I. conceived an extraordinary esteem for his works, ho-

noured him with knighthood, and gave him his own picture set round with diamonds, assigned him a considerable pension, sat very often to him for his picture, and was followed by most of the nobility and gentry in the kingdom. He had therefore, prodigious business for portraits, about which he at first took infinite pains, but at last hastily ran them over. A friend asking him the reason, he answered, "I have worked a long time for reputation, and now I work for my kitchen." He was of low stature, but well proportioned, very handsome, modest, and extremely obliging; an encourager of all who excelled in any art or science, and extremely generous. He married one of the fairest ladies of the English court, a daughter of the lord Ruthen, earl of Gowry, and though she had but little fortune, maintained her with a grandeur answerable to her birth. He himself was generally richly dressed, his coaches and equipage were magnificent. His retinue very numerous, his table very splendid, and frequented by persons of the greatest quality of both sexes. He proposed to make cartoons for the banquetting-house at Whitehall, the subject of which was to be the institution of the order of the Garter, the procession of the knights in their habits, with their installations, and St. George's feast; but demanding 8000 l. that sum was thought unreasonable; and while the king was treating with him for a less sum, he died, in the year 1641, aged forty-two.

VANELLUS, the LAFWING, in ornithology, the black-breasted tringa, with a hanging crest.

VANES, on mathematical instruments, are sights made to move and slide upon cross-staves, fore-staves, quadrants, &c.

VAPOR, or VAPOUR, in meteorology, a thin vesicle of water, or other humid matter, which ascends to a certain height in the atmosphere, where it is suspended till it returns in the form of rain, hail, snow, or the like. An assemblage or number of particles, or vesicles of vapour, constitutes what we call a cloud.

VAPORARIUM, a vapor-bath, in chemistry, implies a bath, or heat, wherein a body is placed so as to receive the fumes of boiling water.

VAPOUR. See Vapor.

VAPOURS, in medicine, is the same with what is otherwise called the hypochondriacal disease. See the article *Hypochondriac Passions*.

VARI,

VARI, in medicine, little hard and ruddy tumours, which frequently infest the faces of young persons of a hot temperament of body.

VARIABLE Quantities, in algebra and geometry, such quantities as are continually increasing or diminishing; in opposition to those which are constant, and remain always the same.

Thus the semi ordinates, and abscissæ of an ellipsis, &c. are variable quantities; because whenever the one increases, the other increases also. See the article *Fluxions*.

VARIANCE, in law, an alteration of something formerly laid in a plea: but where a plea is good in substance, it is held that a small variance will not injure it.

VARIANCE, also implies an alteration or change of condition in a person or thing, after some former concern, or transaction therewith.

VARIATION, in geography, and navigation, the deviation of the magnetical needle, from the true north point of the horizon; or it is an arch of the horizon intercepted between the meridian of the place of observation, and the magnetic meridian. See *Compass* and *Magnet*.

VARIATION of the Moon, in astronomy, the third inequality observed in that planet's motion. See *Moon*.

VARIATION of the Variation, the change in the declination of the needle observed at different times in the same place.

VARIATION of Quantities, in algebra. See *Combination*.

VARIATION of Curvature, in geometry, is used for that inequality or change which happens in the curvature of all curves, except the circle; and this variation or inequality constitutes the quality of the curvature of any line.

VARIATION, in music, is understood of the different manners of playing or singing a tune or song, whether by subdividing the notes into several others of lesser value, or by adding graces, &c. in such manner however, as that one may still discern the ground of the tune through all the enrichments; which are called *embroideries*.

VARIEGATION, among botanists and florists, the streaking and diversifying the leaves of plants, and the petals of flowers, with several colours. These leaves whose middles are variegated with a flow or white, in spots, are called *blanched*; as in several varieties of holly:

but when the leaves are edged with either colour, they are called *striped plants*.

Among all the kinds of variegated flowers, none are more beautiful than the auricula, carnation and tulip.

VIOLÆ, the small-pox. See *Pox*.

VARIORUM, or *Cum Notis Variorum*, denotes an edition of a classic author, elucidated with the notes of various authors; and these editions are generally the most valued.

VARIX, in medicine, a dilation of a part of a vein, so as to make it bulge out; and form a little, soft, knotty, but painless tumour.

The cure is to be attempted by evacuations, as phlebotomy, and cathartics; external applications, as discutient fomentations, cataplasms, embrocations, bandages, &c. and where the case becomes dangerous by incision.

VARNISH, or **VERNISH**, is a thick, viscid, shining liquor, used by painters, gilders, and various other artists, to give a gloss and lustre to their works; and to defend them from the weather, dust, &c.

Laying on of VARNISHES. If you varnish wood, let your wood be very smooth, close-grained, free from grease, and rubbed with rushes.

1. Lay on your colours as smooth as possible; and, if the varnish has any blisters in it, take them off by a polish with rushes.

2. While you are varnishing, keep your work warm, but not too hot.

3. In laying on your varnish begin in the middle, and stroke the brush to the outside; then to another extreme part, and so on till all be covered; for if you begin at the edges, the brush will leave blots there, and make the work unequal.

4. In fine works, use the finest tripoli in polishing: do not polish it at one time only, but, after the first time, let it dry for two or three days; and polish it again for the last time.

5. In the first polishing, you must use a good deal of tripoli, but in the next a very little will serve: when you have done, wash off your tripoli with a sponge and water; dry the varnish with a dry linen rag; and clear the work, if a white ground, with oil and whiting; or, if black, with oil and lamp-black.

VAS, a vessel either for mechanical, chemical, culinary, or any other uses. In anatomy, all the parts which convey a fluid.

fluid are called vessels, as the veins, arteries, and lymphatics.

VASA CONCORDIA, among hydraulic authors, are two vessels, so constructed as that one of them, though full of wine, will not run a drop; unless the other, being full of water, do run also. Their structure and apparatus may be seen in Wolhus Element. Mathes. t. I. Hydraul.

VASCULAR, VASCULARIS, in anatomy, is applied to any thing consisting of divers vessels, veins, arteries, &c. We say, the vascular and valvular texture of the lungs. All the flesh in an animal body, is found to be vascular, none of it parenchymous, as the ancients imagined.

VASCULIFEROUS PLANTS, such whose seeds are contained in vessels, which are sometimes divided into cells.

VASE, a term frequently used for ancient vessels dug from under-ground, or otherwise found, and preserved in the cabinets of the curious.

In architecture, the appellation vase is also given to those ornaments placed on corniches, fochles, or pedestals, representing the vessels of the ancients, particularly those used in sacrifice; as incense-pots, flower-pots, &c. They serve to crown or finish facades, or frontispieces; and hence called acroteria.

The term vase, however, is more particularly used in architecture, to signify the body of the Corinthian and Composite capital; otherwise called the tambour or drum, and sometimes the campana or bell.

Vase is sometimes also used, among florists, for what is more usually called the calyx, or cup.

VASSAL, in old law books, a person who vowed fidelity and homage to a lord, on account of some land, &c. which he held of him, in fee.

VAT, or FAT, a vessel for holding wine, ale, beer, cyder, &c. in the time of their preparation.

VATICAN, a magnificent palace of the pope of Rome, which is said to consist of several thousand rooms: but the parts of it most admired are the grand staircase, the pope's apartment, and especially the library, which is one of the richest in the world, both in printed books and manuscripts.

VAULT, in architecture, an arched roof, so contrived that the stones which form it sustain each other. Vaults are, on many occasions, to be preferred to soffits, or flat ceilings, as they give a

greater height and elevation, and are besides more firm and durable. Salmasius observes, that the ancients had only three kinds of vaults. The first was the fornic, made cradle-wise; the second a testudo, i. e. tortoise-wise, which the French call cul de four, or oven-wise; and the third conchia, or trumpet-wise.

But the moderns have subdivided these three sorts into many more, to which they have given different names, according to their figures and uses: some of them are circular, and others elliptical.

Again, the sweeps of some are larger, others less, portions of a sphere. All such as are above hemispheres, are called high, or surmounted, vaults; and all that are less than hemispheres, are called low, or surbated, vaults, or testudines.

In some vaults the height is greater than the diameter; in others it is less: others again, are quite flat, and only made with hausses; others like ovens, or in the form of a cul de four, &c. and others growing wider as they lengthen, like a trumpet.

Master VAULTS are those that cover the principal parts of buildings, in contradistinction to the upper or subordinate vaults which only cover some little part, as a passage or gate, &c.

Double VAULT is one that is built over another, to make the outer decoration range with the inner; or, to make the beauty and decoration of the inside consistent with that of the outside, leaves a space between the concavity of the one and the convexity of the other. Instances of which we have in the dome of St. Peter's at Rome, St. Paul's at London, and in that of the Invalids at Paris.

VAULTS with Compartments, are such whose sweep, or inner face, is enriched with pannels of sculpture, separated by platbands. These compartments, which are of different figures, according to the vaults, and usually gilt on a white ground, are made with stone or brick-walls, as in the church of St. Peter at Rome, or with plaster on timber vaults.

Key of a VAULT is a stone or brick in the middle of the vault, in form of a truncated cone, serving to bind or fasten all the rest.

Ribs, or strings up of a VAULT, are the sides which sustain it.

Pendentives of a VAULT, is the part suspended between the arches or ogives.

UBIQUI: Y omnipresence, an attribute of the Deity, whereby He is always

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intimately present to all things; gives the esse to all things; knows, preserves, and does all in all things. See *God*.

UDDER, *Uter*, in comparative anatomy, that part in bruits wherein the milk is prepared, answering to the mammar, or breasts, in woman.

VECTOR, in astronomy, a line supposed to be drawn from any planet moving round a center, or the focus of an ellipsis, to that center or focus.

VEER, a sea term, variously used. Thus veering out a rope, denotes the letting it go by hand, or letting it run out of itself. It is not used for letting out any running rope except the sheet.

VEER is also used in reference to the wind; for, when it changes often, they say it veers about.

VEGETABLE, in physiology, a term applied to all plants, considered as capable of growth; that is, to all natural bodies which have parts organical formed for generation and accretion, but not sensation.

In vegetables, there is supposed to be a principle of life, commonly called the vegetative soul. Boerhaave very scientifically defines a vegetable to be a body generated of the earth; to which it adheres, or is connected, by parts called roots, through which it receives the matter of its nourishment, and increase; and consisting of juices, and vessels, sensibly distinct from each other. Or, a vegetable is an organical body, composed of vessels and juices, every where distinguishable from each other; to which grow roots, or parts, whereby it adheres to some other body, from which it derives the matter of its life, and growth. This definition furnishes a just and adequate idea of a vegetable: for by its consisting of vessels and juices, it is distinguished from a fossil; and by its adhering to another body, and deriving its nourishment therefrom, it is distinguished from an animal.

VEGETATION, the act whereby plants, and other living bodies, receive nourishment, and grow. Plants, we learn from the microscope, consist of different parts, vessels, &c. analogous to those of animals: and each kind of vessel is supposed to be the vehicle of a different humour, or juice, secreted from the mass of sap; which is considered as the blood, or common fund of them all.

VEGETATIVE, *Vegetivus*, a term applied to that principle or part in plants, by virtue of which they receive nourish-

V E L

ment, and grow or vegetate. The philosophers speak of three kinds of souls, the vegetative, sensitive, and rational. The vegetative soul is that principle whereby trees and plants live, grow, and produce their kind, &c.

This vegetative principle is differently seated in different plants: an ingenious author observes, that, generally speaking, its place is exactly between the trunk and root; at least, this appears to be the place in most of the semiferous tribe; which, if cut down near the place, rarely shoot again.

In other plants, as the elm, and many other edible plants, it seems to reside wholly in the roots; which, if cut into ever so many parts, yet those being planted in the ground soon grow. In others, as in the willow kinds, it seems to be diffused all over both root, trunk, and branches, inasmuch that, if cut into a thousand pieces, there is no destroying them without splitting them in the middle, and scarcely then. Lastly, in others, as the cereus's, ficus's, &c. It is seated in the body, branches, and leaves, any of which being put into the ground, strike root immediately, and grow. The office of this vegetative principle is to concoct the indigested earth and salts which ascend through the roots, and to assimilate them to the nature of the plant.

VEHICLE, in general, any thing that carries or bears another along: but is more particularly used in pharmacy for any liquid serving to dilute some medicine, that it may be administered more commodiously to the patient.

VEIL, *Vellum*, a piece of stuff serving to cover or hide any thing. In Romish churches, in time of Lent, they have veils or curtains over the altar, crucifix, images of saints; &c. A veil or crape is wore on the head by nuns, as a badge of their profession: the novices wear white veils; but those who have made the vows, black ones.

VEIN, in anatomy, a vessel which conveys the blood from the artery back to the heart.

VEIN, among miners, that space which is bounded with woughs, and contains ore, spar, calc, clay, chert, croil, brown-iron, pitcher-chert, cur, which the philosophers call the mother of metals, and sometimes soil of all colours. When it bears ore, it is called a quick vein; when no ore, a dead vein.

VELLICATION,

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VELLICATION, among physicians, the act of twitching. The word is more particularly applied to a sort of sudden convulsions that happen to the fibres of muscles.

VELOCITY, Swiftness, or that affection of motion, whereby a moving body is disposed to run over a certain space in a certain time. See *Motion*.

For the velocity of falling bodies: See *Acceleration*.

VELOM, or **VELLUM**, a kind of parchment, finer, evenner, and whiter than the common sort. See *Parchment*.

VELVET, a rich kind of stuff, all silk, covered on the outside with a close, short, fine, soft flay, the other side being a very strong close tissue.

VENAL, or **VENOUS**, among anatomists, &c. something that bears a relation to the veins.

This word is also used for something bought with money, or procured by bribes.

VENEERING, **VANEERING**, or **FINERING**, a kind of marquetry, or inlaying, whereby several thin slices or leaves of fine woods, of different kinds, are applied and fastened on a ground of some common wood.

VENEREAL, something belonging to venery; as the lues venerea, French disease or pox. See *Gonorrhoea*, &c.

VENERY is used for the act of copulation, or coition of the two sexes. See *Generation*.

VENERY also denotes the act or exercise of hunting wild beasts, which are also called beasts of venery, and beasts of the forest.

VENETA *Belus*, the *Venetian bole*, a fine red earth used in painting, and called in the colour-shops *Venetian red*.

VENIAL, in the Romish theology, a term applied to slight sins, and such as easily obtain pardon. In confessing to the priests, people are not obliged to accuse themselves of all their venial sins. The thing that gives the greatest embarrass to the Romish casuists, is to distinguish between venial and mortal sins. The reformed reject this distinction of venial and mortal sins, and maintain, that all sins, how grievous soever, are mortal. And the reason they urge is, that all sins, though of their own nature mortal, yet become venial or pardonable, by virtue of our Savior's passion, to all such as fulfil the conditions on which it is offered in the Gospel.

* **VENICE**, a rich city of Italy, and one of the most celebrated and considerable

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places in the world. It is the capital of a republic of the same name, in the Dogado, with a patriarchate, and an university. It is built on little islands in the sea, which are said to be seventy-two in number. The houses are all built upon piles, and properly speaking, there is no street in the city, for the houses are all built on the sides of canals. There is no passing through this city in a carriage, for which reason they make use of a sort of boats called gondolas. Some of the canals have a double key, as in Holland, for those that walk on foot. It is favourable to the singular neatness, which predominates throughout the whole place, and in the houses; and likewise facilitates the carriage of all sorts of merchandises, and goods from one place to another. It has also its inconveniences, for they have no water but what is brought a great way off in casks; and the canals in summer have an offensive smell. There are above 300 bridges over these canals; the most famous of which is that called *Rialto*. It is built about the middle of the great canal, which divides Venice into two parts; is of white marble, and has but one arch, which is ninety feet wide. There are in Venice 53 public squares, the principal of which is called *St. Mark's Place*, and is the greatest ornament to the city. There are 150 palaces, the finest of which is that of the Doge, which fronts *St. Mark's Place*. He lodges in the upper apartments, and those below are for the assemblies of the councils of state, with the body of the nobility and magistrates. Besides these large buildings, there are 115 towers, of surprising height and structure; 64 marble statues, and 23 of bronze, which are all master-pieces of workmanship. The arsenal of Venice is the finest, and best furnished in Europe. It is surrounded with very high walls, and several small towers, where there is a good guard. In these towers there are bells, which the centinels ring on the least appearance of danger. In this arsenal there are arms for 100,000 men, as well horse as foot; besides 2000 cannons always ready for service, either by sea or land. In this city there are 70 churches, 39 monasteries, 28 nunneries, and 17 hospitals. The cathedral church of *St. Mark*, in which they pretend to keep the body of *St. Mark the Evangelist*, is gloomy within, but its walls are of marble, and the pillars of the front are encrusted with jasper and porphyry. The number of the inhabitants are above 160,000, and they

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have a flourishing trade in silk manufactories, bone lace, all sorts of glasses and mirrors, which make their principal employments. There are two academies of painting. It is 72 miles E. by N. of Mantua, and 225 N. of Rome. Lon. 13. 10. E. lat. 45. 25. N.

VENT, VENT-HOLE, or SPIRACLE, a little aperture left in the tubes or pipes of fountains, to facilitate the air's escape; or, on occasion, to give them air, as in frosty weather, &c. for want of which they are apt to burst. Vent is likewise applied to the covers of wind furnaces, whereby the air enters, which serves them for bellows, and which are stopped with registers or sluices, according to the degree of heat, required, as in the furnaces of glass-houses, assayers, &c.

VENTER, BELLY in anatomy, a cavity in the body of an animal, containing viscera, or other organs necessary for the performance of divers functions.

Physicians divide the human body into three venters, regions, or cavities; the first, the head, containing the brain, &c. The second, the breast, or thorax, as far as the diaphragm, containing the organs of respiration. The third, which is what we call the venter, or belly, is that wherein the intestines and organs of generation and digestion are contained; called, by anatomists, the abdomen.

VENTER is also used in speaking of a partition of the effects of a father and mother, among children born, or accruing from different marriages.

VENTER is also used for the children whereof a woman is delivered at one pregnancy: thus, two twins are said to be of the same venter.

VENTER DRACONIS, DRAGON'S BELLY, in astronomy, denotes the middle of a planet's orbit, or that part most remote from the nodes, that is, from the dragon's head and tail; being the part which has the greatest latitude, or is at the greatest distance from the ecliptic.

VENTIDUCTS, in building, are spiracles or subterraneous places, where fresh, cool wind being kept, they are made to communicate, by means of tubes, funnels, or vaults, with the chambers or other apartments of a house, to cool them in sultry weather.

VENTILATOR, a machine by which the noxious air of any close place, as an hospital, goal, ship, chamber, &c. may be changed for fresh air. The noxious qualities of bad air have been long known,

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though not sufficiently attended to in practice; but it is to be hoped that the indefatigable pains taken by Dr. Hales, to set the mischiefs arising from foul air in a just light, and the remedy he has proposed by the use of his ventilators, will at length prevail over that unaccountable sloth or obstinacy, which, where particular interests are not concerned, seems to possess the generality of mankind, and which rarely allows them to give due attention to any new discovery.

VENTRICLE, Ventrículus, any little cavity; but it is more particularly used by physicians and anatomists, for the stomach. See *Stomach*.

For those cavities of the heart and brain, called ventricles, see *Heart* and *Brain*.

VENTRILOQUOUS, a term applied to persons who speak inwardly, having a peculiar art of forming speech, by drawing the air into the lungs; so that the voice, proceeding out of the thorax, to a bystander seems to come from a distance.

Such a person we had sometime ago in London, a smith by profession, who had the faculty in such perfection, that he could make his voice appear, now, as if it came out of the cellar; and in the next minute as if in an upper room: and no body present could perceive that he spoke at all; accordingly, he has frequently called a person first up then down stairs; then out of doors, then this way, then that, and all this without stirring from his seat, or appearing to speak at all.

VENUS, in astronomy, one of the inferior planets, revolving round the sun, in an orbit between that of Mercury and the earth.

VENUS, in chemistry, the same with copper. See *Copper*.

VENUS, in pagan worship, the goddess of love and beauty. Cirero mentions two other deities of this name, of which the most famous were the *Venus*, styled *Urania* and *Celestis*, and the *Venus Pandemos*, or *Popularis*, the wife of Vulcan, and the goddess of wanton and effeminate love. To the first the pagans ascribed no attributes but such as were agreeable to the strictest chastity and virtue; and of this deity they admitted no corporeal resemblance, she being only represented by the form of a globe, ending conically. But the most famous of these goddesses is the wife of Vulcan, who is represented as springing from the froth raised by the genitals of Saturn, when cut

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off by Jupiter and thrown into the sea. As soon as she was formed, she was laid in a beautiful shell embellished with pearl, and wafted by gentle zephyrs to the isle of Cytherea, whence she sailed to Cyprus. At her landing flowers rose beneath her feet; she was received by the Hours, who braided her hair with golden fillets, and then wafted her to heaven; where her charms appeared so attractive, that most of the gods desired her in marriage; but Vulcan, by the advice of Jupiter, gained possession by putting poppies into her nectar. As Venus was the goddess of love and pleasure, the poets have been lavish in the description of her beauties, and the painters and statuary have endeavoured to give her the most lovely form. Sometimes she is represented clothed in purple, glittering with gems, her head crowned with roses, and drawn in her ivory car by swans, doves, or sparrows: at others, she stands attended by the graces; but in all positions, her son Cupid is her inseparable companion. She was honoured as the mother of Hymeneus, Cupid, Æneas, and the Graces, and was passionately fond of Adonis and Anchises. This goddess was principally worshipped at Paphos and Cyprus, and the sacrifices offered to her were white goats and swine, with libations of wine, milk, and honey. Her victims were crowned with flowers, or wreaths of myrtle.

VERB, in grammar, a word serving to express what we affirm of any subject, or attribute to it; or, according to others, it is a word principally used to signify the affirmation, and shews that the discourse, wherein it is used, is that of a man, who not only has a conception of things, but judges or affirms something of them: though it is principally used in this sense yet it is made use of also to signify other motions of the soul, as to desire, to pray, to command; but this it only does by changing the mood or inflexion.

VERBAL, something that belongs to verbs, or even to words of any kind spoken with the mouth.

Thus, verbal nouns, among grammarians, are those formed of verbs.

Again, a verbal contract is one made merely by word of mouth, in opposition to that made in writing.

VERBERATION, in physics, a term used to express the cause of sound, which arises from a verberation of the air, when struck in divers manners by the several parts of the sonorous body first put into a vibratory motion.

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VERDEGREASE, or **VERDEGRIS**, a kind of copper corroded by a fermented vegetable acid into a bluish green substance.

VERDERER, or **VERDEROR**, a judicial officer of the king's forest, whose business is to look to the vert, and see it well maintained.

VERDICT, the answer of the jury given to the court, concerning the matter of fact, in any case civil or criminal, committed by the court to their trial and examination. A verdict is either general or special. A general verdict is that which is brought into the court in like general terms as the general issue, as, in an action of disseisin, the defendant pleads no wrong, no disseisin. Then the issue is general, whether the fact be wrong or not, which being committed to the jury, they, upon consideration of the evidence, come in and say, either for the plaintiff, that is a wrong disseisin; or for the defendant, that is no wrong disseisin. A special verdict, is, when they say at large, that such and such a thing they found to be done by the defendant or tenant; declaring the course of the fact, as in their opinion it is proved; and praying the judgment of the court, as to what is law in that case.

It is said, that a jury may give a general or special verdict, in all actions, and cases; and that the court is obliged to receive it, provided it be pertinent to the point in issue: also if the jury will take upon them to bring in any thing that is matter of law, their verdict shall be received.

VERDITER, or **VERDTER**, a kind of mineral substance, sometimes used by the painters, &c. for a blue; but more usually mixed with a yellow for a green colour.

VERDOY, in heraldry, denotes a bordure of a coat of arms, charged with any kinds or parts of flowers, fruits, seeds, plants, &c.

VERGE, the compass of the king's court, which bounds the jurisdiction of the lord steward of the household; and which is thought to have been twelve miles round. The term verge is also used for a stick or rod, whereby one is admitted tenant to a copyhold estate by holding it in his hand, and swearing fealty to the lord of the manor.

VERGERS, certain officers of the courts of King's Bench and Common Pleas, whose business it is to carry white wands before the judge. There are also

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also vergers of cathedrals and collegiate churches, who carry a rod tipped with silver before the bishop, dean, &c.

VERGETTE, in heraldry, denotes a pallet, or small pale; and hence, a shield divided by such pallets, is termed vergette.

VERIFICATION, in general, the act of proving a thing; but among the French, it only signifies the recording of the king's edicts by the parliament.

VERJUICE, a juice or liquor drawn from four grapes, or wild apples, unfit for wine, or cyder; or from sweet ones, while yet acid, and unripe.

VERMICELLI, or **VERMICHELLY**, a composition of flour, cheese, yolks of eggs, sugar, and saffron, reduced to a paste, and formed into long slender pieces like worms, by forcing it with a piston through a number of little holes. It was first brought from Italy, where it is in great vogue; it is chiefly used in soups and pottages, to provoke venery, &c.

VERMICULAR, an epithet given to any thing that bears a relation or resemblance to worms, vermiculi. See *Worm*.

Anatomists particularly apply it to the motion of the intestines and certain muscles of the body.

VERMIFORMES Musculi, are the four muscles in each hand and foot, which bring the fingers and toes towards the thumbs and great toes, called also lumbricales.

VERMILION, a very bright and beautiful colour, in great esteem among the ancients, under the name of minium.

There are two kinds of it, the one natural, the other factitious. The natural is found in some silver mines, in the form of a ruddy sand, which is afterwards prepared and purified by several lotions and coctions. The artificial is made of mineral cinnabar, ground up with aquaviva and urine, and afterwards dried.

It is also made of lead burnt and washed, or of cerus prepared by fire: but this is not properly called vermilion, but minium, or red-lead.

It is of great use with painters in oil and miniature; and among the ladies for a fucus, or paint, to heighten the complexion of such as are too pale.

VERMIN, a collective name including all kinds of little animals, or insects, which are pernicious or troublesome to men, beasts, fruits, &c. as worms, lice, fleas, caterpillars, ants, flies, &c.

VERMINATION, the act of breed-

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ing worms, and other vermin; particularly bots in cattle, &c.

VERMIVOROUS ANIMALS, such as feed upon worms.

VERNACULAR, is applied to any thing that is peculiar to some one country.

VERNAL, something belonging to the spring season. Hence vernal leaves, are those leaves of plants which come up in the spring. Vernal signs, are those which the sun is in during the spring season, viz. Aries, Taurus, and Gemini. Vernal equinox, is that which happens when the sun is ascending from the equator towards the north pole.

VERNIER, or **NONIUS**, among mathematicians, a scale of divisions, serving to cut the divisions of an arch into single minutes.

* **VERNON**, EDWARD, Esq; an English admiral, was descended from an ancient family in Staffordshire, and born at Westminster the 14th of November 1684. His father, who was secretary of state to king William and queen Mary, gave him a good education; but having an inclination for the sea-service, he pursued those studies which had a relation to navigation and gunnery. His first expedition at sea was under admiral Hopson, when the French fleet and Spanish galleons were destroyed at Vigo. In 1702 he served in an expedition to the West Indies, under commodore Walker; and in 1704 served on board the fleet commanded by Sir George Rooke, in conveying the king of Spain to Lisbon, when Mr. Vernon received 100 guineas and a ring from that king's own hand. He was also at the famous battle of Malaga. In 1708 he was sent to the West Indies as rear-admiral, under Sir Charles Wager, where he took many valuable prizes. In 1727, captain Vernon was chosen member for Penryn in Cornwall, and soon after sent to Gibraltar as commander of the Grafton, to join Sir Charles Wager. The next expedition in which Mr. Vernon was engaged was that which immortalized his name. This was in 1739; he was appointed vice-admiral of the blue, and commander in chief of a squadron fitted out for destroying the settlements of the Spaniards in the West Indies. Having received his instructions, he weighed anchor from Spithead the 23d of July, and on the 20th of November got in sight of Porto-Bello, and the next day began the attack of that town, when, after a furious engagement

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agement on both sides, it was taken on the 22d, with a considerable number of cannon, mortars, and ammunition, and also two Spanish men of war. He then blew up the fortifications, and left the place for want of land-forces sufficient to keep it, but first distributed 10,000 dollars among the forces for their encouragement. On the 3d of March he anchored before Carthegena, and on the 6th began to bombard that town, but had not force sufficient to take it. After his return home, the rebellion in 1743 breaking out, he was employed in guarding the coasts of Kent and Sussex, when he stationed a squadron of men of war in so happy a manner, that he blocked up the French ports in the channel. But soon after, complaints being made against him for superceding the orders of the lords of the admiralty, in appointing a gunner in opposition to one recommended by themselves, he was struck off the list of admirals; on which he retired from all public business, except attending the house of commons as member for Ipswich in Suffolk. He generally resided at his country seat at Nacton. He died the 28th of October 1757, in the 73d year of his age.

* **VERONA**, a city of Italy, in the territory of Venice. It is seated near the mountains, and is seven miles in circumference. It is naturally strong, but the Venetians have so increased the fortifications, that it is almost impregnable. The citadel stands on a plain on the banks of the river Adige, and there are two castles on a neighbouring mountain. It has five gates, which are not only strong but handsome, and adorned with sculpture, statues, columns, and other works in marble. In the market for cattle is a very large amphitheatre built with free-stone and marble, in which are 42 rows of benches, or seats for the spectators, one above another, so that 23000 persons might be commodiously seated at the same time. There are several magnificent palaces here, but the town-house excels all the rest. It has a cathedral, and several churches and convents. It is 17 miles N. E. of Mantua, 62 S. W. of Venice. Long. 11. 20. E. Lat. 45. 24. N.

VER-POLYPE, in natural history, a name given by Reaumur and some other authors to a species of water-worm, by no means to be confounded with the creature called simply the polype, and which is so famous for its reproduction of parts cut off, and for many other singular properties. See *Polype*.

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* **VERSAILLES**, a town of France, in the Isle of France, ten miles S. W. of Paris. It was formerly an inconsiderable village, till Lewis XIV. built a magnificent palace here, which is the usual residence of the kings of France. The buildings and the gardens are adorned with a vast number of statues, and the water-works are all worthy of admiration. The great gallery is thought to be as curious a piece of workmanship of that kind as any in the world; nor is the chapel less to be admired for its fine architecture and ornaments. The gardens with the park are five miles in circumference, and are surrounded with walls.

VERSE, in poetry, a line or part of a discourse, consisting of a number of long and short syllables which run with an agreeable cadence, the like being also reiterated in the course of the piece.

Verses are of various kinds, some denominated from the number of feet wherof they are composed, as the monometer, dimeter, trimeter, tetrameter, pentameter, hexameter, &c.

Some also, from the kinds of feet used in them, as the pyrrhichion, proceleusmatic, iambic, trochaic, &c.

Sometimes verses are denominated from the names of the inventors or the authors who have used them with most success, as the Anacreontic, Archilochian, Alclepiæ, Alcianic, Sapphic, &c.

The moderns have invented heroic or Alexandrine verses; the ancients likewise invented various kinds of poetical devices in verse, as centos, echos, &c.

VERSE is also used for a part of a chapter, section, or paragraph, subdivided into several little articles.

The whole bible is divided into chapters, and the chapters are subdivided into verses. The division of verses in the New Testament was first made by one Robert Stephens, with which division many learned men find great fault, and yet it is every where followed.

VERSIFICATION, the art and manner of making verse; also the tone and cadence of verse.

VER-LON, a translation of some book or writing, out of one language into another.

VERT, in heraldry, the term for a green colour. It is called vert in the blazon of the coats of all under the degree of nobles; but in coats of nobility, it is called emerald; and in those of kings, venus. In engraving, it is expressed by diagonals, or lines drawn athwart, from right

right to left, from the dexter chief corner to the sinister base.

VERTEBRÆ, a chain of little bones reaching from the top of the neck down the back to the os sacrum, and forming a third part of the human skeleton called the *spina dorsæ*. They have their name *à vertendo*, because it is on them the head and trunk turn; the Greeks call them *σπονδυλοι*, *spondyli*, for the same reason.

VERTEBRALES, in anatomy, a pair of muscles, whose office is to stretch out all the vertebrae of the neck.

VERTEX, in anatomy, denotes the crown of the head, or the uppermost part, situated between the sinciput and the occiput.

Hence vertex is also used, figuratively, for the top of other things; thus the vertex of a cone, pyramid, &c. is the top of any one of these figures.

VERTEX of a Glass, in optics, the same with the pole thereof.

VERTEX, in astronomy, is also used for the point of heaven perpendicularly over our heads, properly called the zenith.

VERTICAL CIRCLE, in astronomy, a great circle of the sphere, passing through the zenith and nadir, and cutting the horizon at right angles: it is otherwise called azimuth. See *Azimut*.

VERTICAL of the Sun, the vertical which passes through the center of the sun at any moment of time.

VERTICAL PLANE, in perspective, a plane perpendicular to the geometrical plane, passing through the eye, and cutting the perspective plane at right angles.

VERTICAL PLANE, in conics, a plane passing through the vertex of the cone, and parallel to any conic section. See *Plane*.

VERTICAL LINE, in conics, a right line drawn on the vertical plane, and passing through the vertex of the cones.

VERTICAL DIAL, is a sun-dial drawn on the plane of a vertical circle, or perpendicular to the horizon.

VERTICAL POINT, in astronomy, the same with vertex or zenith.

VERTICITY, is that property of the load-stone, whereby it turns, or directs itself to some peculiar point. See *Magnet*.

VERTIGO, in medicine, a disease in which the head seems to turn round.

VERTUMNUS, in pagan worship, the god of seasons. He presided over the

fruits of the earth, and was also considered as the god of tradesmen, and protector of commerce. He was therefore represented as assuming whatever shape he pleased. Vertumnus falling in love with Pomona, the tutelary deity of orchards and fruit-trees, visited her gardens in the form of an old woman, and found her surrounded with her luxurious stores, and employed in looking after her plantations. Pan and his lustful satyrs, and also Silenus and Priapus, had in vain attempted her innocence, but none of them had been able to make her break her vow of virginity. Vertumnus, in this disguise, artfully praised her fruit, commended her care, and from the view of the tender vine, supported by the sturdy elm, insinuated the necessities and advantages of a married life; he spoke in praise of Vertumnus, and his various transformations, while the nymph listened with an indifferent ear to his eloquence, and her heart continued unmoved, till throwing off the appearance of an old woman, and assuming his youthful beauty, he presently gained her consent. Historians say, that Vertumnus was an ancient Tuscan prince, who first taught his subjects to plant orchards, and to prune and engraft fruit-trees; whence he is said to have married Pomona.

VERU-MONTANUM, in anatomy, a kind of little valve, in the place where in the ejaculatory ducts enter the urethra. Its use is to prevent the urine, in passing the urethra, from getting in at these ducts, and so mixing with the semen.

VESICATORY, an external medicine, serving to raise a blister; whence also it is itself, though improperly, called a blister.

VESICULA, VESICLE, a diminutive of *vesica*, signifying a little bladder. There are several parts in the body which bear this appellation; as,

VESICULA FELLIS, cistula, fellea, or the gall-bladder; which is an oblong membranous vessel, not unlike a pear both in form and size; and is situated in the hollow part of the liver.

VESPA, the wasp, in zoology.

VESPER, in the church of Rome, denote the afternoon service, answering in some measure to the evening prayers of the church of England.

Sicilian VESPER, is a famous era in the French history, signifying a general massacre of all the French in Sicily, in the year 1282; to which the first roll that called to vespers was the signal.

VESPER,

VESPERTILIO, the bat, in zoology, a genus of quadrupeds of the order of the *ferax*.

The common bat is about the bigness of a mouse, and very much resembles it in shape and colour. There are several other species of this creature, some with, and others without a tail.

VESSEL, in general, any thing for holding liquors; such are our domestic cups, pots, &c. as also the retorts, mattaltes, crucibles, &c. of the chemists.

In anatomy, all the parts which contain or convey a fluid, are called vessels; as the veins, arteriis, lymphatics, &c. See *Vein, Artery, &c.*

Some also extend the word vessel to the nerves, as supposing them the conduits of the animal spirits. See *Nerves, and Animal Spirits.*

VESSEL, in navigation, a general name for all sorts of ships.

VESTALIA, in Roman antiquity, a festival celebrated in honour of the goddess Vesta, on the fifth of the ides of June; that is, on the ninth of that month. On that day, banquets were made before the houses, and meats were sent to the vestals, to be offered by them to the goddess.

VESTALS, in church history, priestesses of the goddess Vesta. The institution of this religious order is ascribed to the king Numa, who, having built a temple to Vesta, in which a perpetual fire was to be kept up, committed the care of supplying and preserving it to four vestals, whose names were Gegania, Verenia, Canuleia, and Tarpeia. Afterwards Tarquin the elder added two more to them; and it does not appear, that their number ever exceeded six, among whom one was superior to the rest, and called *Vestalis maxima*.

The vestals were chosen from six to ten years of age, beyond which age none was admitted among them. They were obliged to strict continence for thirty years, the ten first of which were employed in learning the ceremonies of religion, the next ten in the performance of them, and the ten last in teaching them to the younger vestals. After this, they were permitted to lay aside their ornaments, quit their office as priestesses, and marry. But, as these marriages were observed not to be very happy, few of them left their old profession, even after the time of their minority was expired. And they found themselves well compensated for the re-

straints of their condition, by the honours that were annexed to it. When they appeared in public, they were attended by lictors, as the kings and consuls were. If they accidentally met a criminal going to execution, he was immediately pardoned. They had the precedence wherever they came, and seats of distinction provided for them at the shews of the Circus. Nay, at last, they had a right of being carried to the Temple of Jupiter in a chariot, which was an honour paid only to those of the imperial family; and they were buried within the city, which was a privilege allowed to none but the greatest personages of the empire. But as the honours done them were great, so their faults were not suffered to go unpunished. The least levity in them, or the smallest neglect in their office was tried by the pontifices, and at their command punished with severity. That punishment, especially, which was inflicted on them for prostituting their honour, had something in it inexpressibly terrible. The criminal was sentenced to death. On the day of execution, the pontifex maximus stripped her of her ornaments, and she was clothed in a mourning habit. She was carried in a litter swathed so tight as to be deprived of the use of her voice. Her friends and relations walked before her in tears; and the procession passed cross the Forum, and thence through the Porta Collina, to the place of her punishment. A little vault was dug in the earth, with a lamp burning in it. The vestal was let down into this vault, the entrance of which was bricked up, and covered with earth. And here she was left buried alive. To suffer the sacred fire to go out was an unpardonable neglect. It was a law, *Virgines vestales in urbe custodiant ignem foci publici sempiternum*. And Festus tells us, that when a vestal suffered it to go out, she was punished with whipping, and treated as a slave. The whole city was in a consternation at the accident, and a fresh fire was kindled in the temple of Vesta, with many purifications. This new fire was kindled either by rubbing two pieces of wood one against the other, or by means of a burning glass, which collecting the pure rays of the sun upon some combustible matter, set it in a flame. The habit of the vestal virgins consisted of an head-dress, called *infula*, which sat close to their heads, and from whence hung certain laces called *vitæ*, a kind of surplice made of white linen, and

over it a purple mantle with a long train to it.

VESTIBLE, in architecture, a kind of entrance into a large building; being an open place before the hall, or at the bottom of the stair-case. Vestibles intended for magnificence are usually between the court and the garden. The Romans had vestibles at the entrance of their houses, for sheltering those persons who were obliged to stand at the door; and we have now vestibles of a like kind in many old churches, houses, &c. usually called porches.

The term vestibile is sometimes also used for a little anti-chamber, before the entrance of an ordinary apartment.

VESTIBLE of the Ear, in anatomy, a cavity forming the middle part of the labyrinth of the ear.

VESTRY, a place adjoining to a church, where the vestments of the minister are kept; and also a meeting at such place, consisting of the minister, church-wardens, and chief men of most parishes, who make a parish vestry or meeting. By custom there are select vestries, being a certain number of persons chosen to have the government of the parish, make rates, and take the accounts of church-wardens, &c. And it is here to be observed, that when any rates are made, the parishioners must have notice of a vestry held for that purpose; in which case all that are absent shall be included by a majority of the parishioners present, who in construction of law are the whole parish. Vestries of parishes are to be consulted by parish-officers; and if a parishioner, who has a right to be present and vote at a vestry, be shut out of the vestry-room, action of the case lies.

VESTRY-MEN, a select number of the principal persons of every parish within the city of London, and elsewhere, who yearly choose parish officers, and take care of its concernments.

VESTRY-CLERK, an officer who keeps the parish accounts.

VESUVIUS, a mountain in the kingdom of Naples in Italy. At the time when this mountain throws out fire and flames, the inhabitants about it have nothing to fear; but when it is quiet, earthquakes ensue, which precede such an eruption of ashes, sulphur, and stones, that the fields suffer greatly thereby for many miles all round. At the bottom of this mountain there is a vineyard, which produces excellent red and

white wines; this last is called Greek wine, and the red, Lacrymæ Christi. Though it is six miles E. of Naples, it has been so affected with some of the terrible eruptions, that it has been darkened at noon-day.

VETCH, *Vicia*, in botany, a genus of plants, the flower of which is of the butterfly kind; the standard is oval, broad at the tail, indented at the point, and the borders are reflexed; the two wings are shorter than the standard; the keel is shorter than the wings; the tail is oblong. It has ten stamina, nine joined and one separated, terminated by erect summits, and a linear compressed germen, supporting a slender style, crowned by an obtuse stigma, which is bearded on the under side. The germen afterwards turns to a long pod with one cell opening with two valves, ending with an acute point, containing several roundish seeds.

VETERAN, in the Roman militia, a soldier who was grown old in the service, or who had made a certain number of campaigns; and on that account was entitled to certain benefits and privileges.

A veteran counsellor has a voice and a seat at audiences, though not at processes by writing. A veteran secretary of the king acquires the privileges, &c. of nobility, to himself and his children.

VIA-LACTEA, in astronomy, the milky way, or galaxy. See *Galaxy*.

VIA-SOLIS, the Sun's Way, in astronomy, is used, among some astronomers, for the ecliptic line, so called because the sun never goes out of it. See *Ecliptic*.

VIATICUM, in the church of Rome, an appellation given to the eucharist, when administered to persons at the point of death.

VIBRATION, in mechanics, a regular, reciprocal motion of a body, as a pendulum, &c. which being freely suspended, swings or oscillates, first this way, then that. See *Pendulum*.

VIBRATION is also used in physics, &c. and for divers other regular alternate motions. Sensation is supposed to be performed by means of the vibratory motion of the nerves, begun by external objects, and propagated to the brain.

VICAR, a person appointed as deputy of another to perform his functions, in his absence, and under his authority. The pope pretends to be vicar of Jesus Christ on earth. He has under him a grand vicar, who is a cardinal, and whose jurisdiction extends over all priests both

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both secular and regular, and even in many cases over laymen.

VICAR, in the canon law, a priest of a parish, the predial tithes of which are impropriated, or appropriated; that is, belong either to a chapter, religious house, &c. or to a layman, who receives them, and only allows the vicar the small tithes, or a convenient salary, anciently called *portia congrua*.

He is thus called, as serving for, or in lieu of a rector, who would be entitled to the great tithes.

These vicars were antiently called *perpetui vicarii*, because not appointed by the bishop to read service; but presented by the patron, and canonical institution given them by the hands of the ordinary; and so having constant succession, or corporations, and never dying.

VICAR GENERAL, a title given by king Henry VIII. to Thomas Cromwell, earl of Essex; with full power to oversee the clergy, and regulate all matters relating to church affairs.

VICE, *Vitium*, in ethics, is usually defined an elective habit, deviating, either in excess, or defect, from the just medium wherein virtue is placed.

It is called a habit, to distinguish it from sin, which is only an act: hence, a sin is looked on as something transient, and a vice as something permanent.

Authors distinguish three states of vice: the first *incontinentia*, of incontinence; wherein a person sees, and approves the good, but is hurried to evil by the violence of his passions. The second, *intemperantia*, of intemperance: wherein even the judgment is depraved and perverted. The third, *feritatis*, of obduracy; wherein the person is totally immersed in vice, without any sense or feeling thereof.

VICE, in smithery, and other arts employed in metals, &c. a machine or instrument, serving to hold fast any thing they are at work upon; whether it be to be filed, bent, or rivetted, &c.

Hand-VICE, a small band of vice serving to hold the lesser works in; that require often turning about. Of these there are two kinds, the broad-chapped hand-vice, which is that commonly used; and the square-nosed hand-vice, seldom used but for filing small round-work.

VICE is also a machine used by the glaziers, to turn, or draw lead into flat rods, with grooves on each side, proper to receive the edges of the glass,

VICE is also used in the composition of divers words, to denote the relation of something that comes instead, or in the place of another.

VICE-ADMIRAL, one of the three principal officers of the royal navy; who commands the second squadron, and has his flag set up in the fore-top of his ship.

VICE-CHAMBERLAIN, called also, in antient statutes, under-chamberlain, an officer in the court, next under the lord-chamberlain; and who in his absence, has command and controul of all officers belonging to that part of the household called the chamber above stairs.

VICE-CHANCELLOR of a University, an eminent member, chose annually, to manage affairs in the absence of the chancellor.

VICE-ROY, a governor of a kingdom, who commands in the name and stead of a king, with full and sovereign authority.

VICE-VERSA, a Latin phrase, importing on the contrary: thus, as the sun mounts higher and higher above the horizon, the shadows of things decrease; and *vice versa*, as he descends lower, they increase.

VICISSITUDE, the regular succession of one thing after another; as the vicissitude of a day and night, of the seasons, &c.

VICOUNT, or VISCOUNT, a degree of nobility next below a count, or earl, and above a baron. See *Nobility, Earl, &c.*

VICTIM, a bloody sacrifice offered to some deity, of a living creature, as a man or beast, which is slain to appease his wrath, or obtain some favour.

VICTORY, the overthrow or defeat of an enemy, in war or combat.

* VICTORY, in pagan worship, one of the blessings honoured by several nations as a goddess. Hesiod represents her as the daughter of Stryx and Pallas; and Varro calls her the daughter of Heaven and Earth. The Romans painted her in the form of a woman, clad in cloth of gold. In some medals she is represented with wings flying through the air, holding a laurel in one hand, and a palm in the other; but in other medals she is seen standing upon a globe, with the same crown and branch of palm.

VICTUALLING-OFFICE, an office kept on Tower-hill, London, for the furnishing his majesty's navy with victuals: It is managed by seven commissioners, who have their inferior officers, as secretaries, clerks, &c. besides agents in divers

divers parts of Great-Britain, Ireland, &c. See *Commissioners*, &c.

VIC TUALS, any sustenance, or things necessary to live upon, as meat and provisions; which are to be sold at a reasonable price, assessed by justices, &c. on pain of forfeiting double the value. By the custom of some manors, they choose yearly surveyors of victuals.

V I E N N A, the capital of the circle of Austria, in Germany, and also of the whole German empire. The city itself is not very large; but the suburbs are so extensive, that in the whole it may contain about 600,000 inhabitants. The city contains no more than 1223 houses, all built of stone, with twenty-nine churches, and eight chapels. This is no wonder, when we consider that the public buildings, as well sacred as profane, take up about a sixth part of the city. Besides, the houses are almost as deep below the ground as they are high above; add to this, that they are generally six or seven stories high. This city has six gates, well defended, and twelve walled bastions, with strong ravelins, which have twice resisted the force of the Turks, namely in 1528 and in 1683. There are eighty streets, and eighteen large market-places. The emperor Charles VI. rebuilt the ancient archducal palace, wherein the emperors formerly resided; he also erected a handsome opera-house. Besides this palace, there are others in several streets, the principal of which are those of Eugene, Lichtenstein, and Daun. The cathedral is built with free-stone, and is 114 yards long, and 48 broad, and the steeple is 447 feet high. The university has several thousand students. Besides this, there is the academy of Lower Austria, founded a few years since, and the archducal library, which is much frequented by foreigners; as it contains above 100,000 printed books, and 10,000 manuscripts. The academy of painting is remarkable for the fine pictures it produces. The inhabitants in general live in a splendid manner, and people of distinction have all sorts of wine at their tables, which they are very free with to strangers. It is seated on the place where the river Vienna, or Wien, falls into the Danube, thirty-two miles west of Presburgh, and 360 north-east of Rome. Long. 16 deg. 26 min. E. lat. 48 deg. 14 min. N.

V I T A R M I S, in law words made use of in indictments and actions of trespass, to shew the violent commission of any trespass or crime; but in an appeal

of death, or where the person is killed with a weapon, these words are not held necessary, because the violence is implied.

VIGILS, in church-history, the fasts appointed before certain festivals, in order to prepare the mind for a due observation of the ensuing solemnity.

VILLAGE, an assemblage of houses, inhabited chiefly by peasants and farmers, and having no market, whereby it is distinguished from a town. Eleta tells us, that the difference made between a mansion, a village, and a manor, is this, viz. a mansion may consist of one or more houses, but must be of one dwelling-place, and none near it; for if any other houses are contiguous, it is then a village; and a manor consists of several villages, or of one alone.

VILLAIN, or **VIELLEIN**, *Villanus*, in our ancient customs, a man of a servile or base condition, viz. a bondman or servant; and there were antiently two sorts of bondmen or villains in England; the one termed a villain in grofs, who was immediately bound to the person of his lord and his heirs; the other a villain regardant to a manor, he being bound to his lord as a member belonging and annexed to the manor whereof the lord was owner; and he was properly a pure villain, of whom the lord took redemption to marry his daughter, and to make him free; and whom the lord might put out of his lands and tenements, goods and chattles, and beat and chastise, but not maim him.

VILLENAGE, a kind of ancient tenure, whereby the tenant was bound to do such services as the lord commanded.

VILLI, among botanists, a kind of down like coarse hair, or the grain or shag of plush, with which some trees abound.

VILLIERS, (**GEORGE**) duke of Buckingham, was the son of Sir George Villiers, by a second wife, and was born at Brookesby, in Leicestershire, the 20th of August, 1592. When he was about eighteen he travelled into France, where he learned perfectly the French tongue, with all the exercises of the French nobility, and particularly excelled in dancing. He continued there three years, and soon after his return to his mother, who was an enterprising woman, took him to court, concluding, that with his fine person and accomplishments, he could not fail of making his fortune under such a monarch as James I. The king going to hunt at Newmarket, the

Cambridge scholars invited him to a play called *Ignoramus*; in which it was contrived that Villiers should appear with all the advantages his mother could let him possess. The scheme took effect. The king, who was ridiculously fond of handsome men and fine cloaths, was extremely delighted with him; and immediately took him into his service. He had been but a few days at court when he was made the king's cup-bearer; a few weeks after he received the honour of knighthood; and then was made a gentleman of the bed-chamber; and knight of the garter. In short, he was advanced with such rapidity, that he was successively made a baron, a viscount, an earl, a marquis; and became lord high admiral of England, lord warden of the cinque ports, master of the horse, and conferred all the honours and all the offices of the three kingdoms without a rival; when, being entirely guided by partial views, he exalted almost all his own numerous family and dependants. In 1620 he married the only daughter of the earl of Rutland, the richest heiress in the kingdom. In the beginning of 1625 Charles I. succeeded to the throne, and the duke enjoyed at least the same degree of favour with the son as he had done with the father. This was a great disappointment to numbers, who, knowing the jealousy and indignation the prince had entertained of the duke, for being near striking him, expected he would now remember his insolence, of which he had often complained. But instead of this, Charles placed the most entire confidence in him; that never king shewed to a subject: all preferments in church and state were given by him: but he had now no interest with the parliament and people. He was voted an enemy to his country, and his ill management was made the ground of their refusing to grant the king a supply. The duke shewed the utmost indignation at finding that they, who had before flattered him, mentioned him now with the greatest acrimony, and called him the corruptor of the king, and the betrayer of the liberties of the people; and in return treated them with contempt, caused this and the next parliament to be speedily dissolved, and upon every dissolution imprisoned or disgraced such members as had given him offence: he caused new projects for raising money to be daily set on foot; and, in every thing he said or did, acted with passion

and violence. In this fatal conjuncture, while the nation was at war with Spain, a new war was precipitately declared against France, for which no reasonable cause could even be assigned. It is said the king was hurried into it, merely to gratify Buckingham's private resentment; and that, having been in France to bring over the queen, he had the confidence to make love to Anne of Austria, the consort of Lewis XIII. and that his high spirit was so exasperated at the repulse he gave him, that nothing would satisfy him but a war between the two nations. But whatever was the cause, the fleet, which had been designed to surprise Calais, was no sooner returned without success, and with much damage, than it was refitted, and the duke made that unfortunate descent upon the isle of Rhé, in which the flower of the army was lost. Having returned to England, repaired the fleet, and recruited his army, he was about to sail to the relief of Rochelle, which was then closely besieged by cardinal Richieu, and which he was the more obliged to relieve, as he had received at the isle of Rhé great supplies of men and provisions from that town, the want of both which they now laboured under. For this purpose he was now at Portsmouth, when he was assassinated by Felton, the 26th of August, 1628, in the 36th year of his age.

VILLOSE, or **VILLOUS**, something abounding with villi, or fibres like coarse hairs: such is one of the coats of the stomach. See *Stomachus*.

VINCULUM, in mathematics, a character in the form of a line, or stroke, drawn over a factor, divisor, or dividend, when compounded of several letters or quantities, to connect them, and shew they are to be multiplied, or divided, &c. together by the other term. Thus $d \times a + b - c$ shews that d is to be multiplied into $a + b - c$.

VINDICATION, or claiming, in the civil law, an action arising from the property a person has in any thing; or a permission to take or seize a thing, as one's own, out of the hands of a person, whom the law has doomed not to be the true proprietor.

VINE, the name of a shrub of the reptile kind, which is with great reason preferred to all others, both for the sweetness of its fruit, and for the ease with which it repays the labour bestowed on its culture. It grows as happily in plains as upon hills, and thrives as well in a strong soil,

soil, as in that which is loose and open; also in poor as well as in rich land, and in a dry as well as in a moist soil. It alone best endures the intemperature of heat, cold, or stormy weather.

VINEGAR, *Aetum*, an acid penetrating liquor, prepared from wine, cyder, beer, &c. of considerable use both as a medicine and sauce.

The daily use of vinegar with food, is salutary in hot bilious dispositions, and wherever there is a tendency to inflammation or putrefaction. It is prejudicial to children, to aged hysterical, and hypochondriacal persons, in cold pale phlegmatic habits, where the vessels are lax, the circulation languid, and the power of digestion weak. It tends in all cases, if used freely, to prevent corpulence; Hoffmann suspects that it produces this effect by impeding the formation of chyle, or destroying the union of the nutritious and ferrous fluids of which chyle is composed; an effect common to all acids, as appears from their coagulating milk and artificial emulsions. Great corpulence have been reduced by the liberal use of vinegar, the acid commonly employed for this purpose, but not with impunity; diseases succeeding, which eluded the power of medicines, and proved at length fatal.

VINEYARD, a plantation of vines. See *Vine*.

VINOUS, something that relates to wine, or has the taste and smell thereof. All vegetables, by a due treatment afford a vinous liquor; as corn, pulse, nuts, apples, grapes, &c.

VINTAGE, a crop of wine, or what is got from the vines each season. The word is also used for the time or season of gathering or pressing the grapes.

VIOL, *Viola*, a musical instrument of the same form with the violin, and struck like that with a bow.

VIOL, is also a term used among mariners, when a hawser, or strand-rope, is bound fast with nippers to the cable, and brought to the jeeer-captain, for the better weighing of the anchor when the main-captain proves insufficient.

VIOLA, the violet, in botany. See *Violet*.

VIOLATION, the act of violating; that is, forcing a woman or committing a rape upon her. This term is also used, in a moral sense, for a breach or infringement of a law, ordinance, or the like; and it is also used for profanation.

VIOLENT, in the schools, a thing done by force; in which sense it stands opposed to spontaneous. See *Spontaneous*

VIOLET, in botany, a genus of plants, whose flower consists of five imbricated petals, with a corniculated nectarium at the base; the stamina are five small filaments, topped with obtuse antheræ, which are sometimes connected; the fruit is an ovate trigonal obtuse capsule, having one cell, which contains many ovate seeds.

VIOLIN, or **FIDDLE**, a musical instrument mounted with four strings, or guts, and struck or played with a bow.

VIOLONCELLO of the Italians, is properly our fifth violin; which is a fiddle-bass-violin, half the size of the common bass-violin, and its strings just half as thick and half as long, which renders the sound just an octave higher than the same.

VIOLONE, in music, a double bass, almost twice as large as the common bass-violin, and the strings bigger and longer in proportion, and consequently its sound an octave lower than that of our bass-violin, which has a noble effect in great concerts.

VIPER, a species of serpent, common to most parts of the world. This is by far the most noxious animal of the serpent kind, that our part of the world affords; and it is as much the most useful in medicine.

VIRAGO, a woman of extraordinary stature and courage; and who, with the female sex, has the mein and air of a man, and performs the actions and exercises of men.

VIRGA is particularly used in law for a verge, or rod, such as sheriffs and bailiffs carry as a badge of their office.

* **VIRGIL**, or Publius Virgilius Maro, was the son of a potter of Andes, near Mantua, where he was born the 15th of October, in the 17th year before the Christian Æra. He studied first at Mantua, then at Cremona, Milan, and Naples, whence going to Rome, he acquired the esteem of the greatest wits, and most illustrious persons, and among others the emperor Augustus, Mæcenæ, and Pollio. He was skilled not only in polite literature and poetry, but also in philosophy, the mathematics, geography, medicine, and natural history. He always preserved a singular modesty, and lived chaste at a time when the manners of the people were extremely corrupt. He carried Latin poetry to such a high perfection, that he was justly esteemed the prince of the Latin poets. He composed the *Ec-*

logue;

logues in imitation of Theocritus; his Georgics in imitation of Hesiod, and the Aeneis in imitation of Homer. It is said that he was twelve years in perfecting his Aeneis, and that the emperor pressing him to put the last hand to it, he let him see his second, fourth, and sixth books, which are the finest. He was of a swarthy complexion, tall, of a sickly constitution, and afflicted with frequent headaches and spitting of blood. He was so very bashful, that he often ran into the shops, to prevent being gazed at in the streets, yet he was so honoured by the Roman people, that once coming into the theatre, the whole audience rose up out of respect to him. He was of a thoughtful and melancholy temper, he spoke little, and loved retirement and contemplation. His fortune was affluent; he had a fine house and well furnished library near Mæcenæ's gardens, on the Esqueline mount at Rome, and also a delightful villa in Sicily. He was so benevolent and inoffensive, that most of his contemporary poets, though they envied each other, agreed in loving and esteeming him.

He ordered, when at the point of death, that his Aeneis should be burnt, but being informed that Augustus would not permit it, he desired that it might not be altered, and on this condition he left that admirable work to Tucca and Varius, two excellent poets, who were his friends, and the emperor took care that the author's intentions should be observed, which is the reason why several of the verses are found imperfect. Virgil died at Brundisium in Calabria, the 22d of September, in the 19th year before the Christian æra, at fifty-one years of age, as he was returning with Augustus from Greece. His body was interred near Naples, and upon his tomb was inscribed these verses composed by himself.

*Mantua me genuit, Calabri rapuere tenet
nunc.*

Parthenope tæcini poscua, ruina duces.

VIRGIN, *Virgo*, a female who has had no carnal commerce with man; or more properly, who has still the flos virginis or maidenhead. In the ancient christian church, there was a kind of religious order, consisting of women, who made open and public profession of virginity; and this before the monastic life or name was known in the world. This appears from the writings of Cyprian and Tertullian, who speak of virgins dedicating them-

selves to Christ, before there were any monasteries to receive them.

VIRGIN is also applied figuratively to several things that retain their absolute purity, and have never been made use of. Thus virgin-wax is that which has never been wrought, but remains as it came out of the hive. Virgin-oil is that which oozes spontaneously out of the olive, &c. without pressing. Virgin-gold is that metal such as it is found pure in the mine, without any mixture of alloy; in which state it is sometimes so soft that it will take the impression of a seal. Virgin-copper is a native copper found in the mine, and which has never been melted down. Virgin quick-silver is that found perfectly formed and fluid in the veins of mines; or at least such as is got from the mineral earth by mere lotion, without fire. Virgin-parchment is that made of the skin of an abortive lamb, &c. See *Wax, Oil, &c.*

VIRGINIA, a country of North America. It is bounded on the S. by Carolina; on the N. by Maryland; on the E. by the Atlantic ocean; but on the W. the bounds are not settled. The entrance into Virginia for shipping is by the mouth of Chesapeake Bay, which runs up into the land above two hundred miles; likewise all ships must pass through it that are bound to Maryland. The principal rivers are James, York, Rappahannock, and Patowmack, all of which are full of convenient and safe harbours. The soil of Virginia is various, and seems fitted for the production of vegetables and trees of all sorts. The richest lands lie near the branches of the rivers, and abound with various sorts of timber surprisingly large. At the heads of the rivers, there are mountains, valleys, hills, and plains. There are also great varieties of earth, for medicines, scouring, making all sorts of earthen ware and pipes; and there is also marie for manuring the land. There are others for painting, such as red and yellow oaker; and in the upper parts are mines of antimony, talc, coal, with quarries of slate and stone for building, as also pebble stones. There are a great variety of fruits, some of which grow there naturally, and some have been transplanted from England, particularly peaches, which grow almost every where upon standard trees, and yet are exceeding good. There are very few towns, or even villages, for the planters have houses scattered every where up and down the country, where they cultivate tobacco.

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es, which is the principal commodity. James Town was formerly the principal, but of late Williamsbury, where there is a college. In general it is an hospitable country, and they are so ready to entertain each other and strangers, that a man may travel through it without any expence. They have a few forts, but their principal defence by land is a militia, and by sea, the men of war sent from England; for they have no ships of their own, though they have all conveniences for building them. There are now no original Americans, improperly called Indians, in the Eastern parts of Virginia, because, as it is supposed, they rather chuse to live by themselves, and follow their own customs. With regard to their complexions, stature, and manner of living, they resemble the other Americans, however, they have a language of their own, and are of a red copper-colour, with coarse black hair, black eyes, and without beards, as they are in almost all the other parts of America. Most authors tell us, that they have beards, and that they pluck them out by the roots; but this is mere fiction.

VIRGINITY, *Virginitas*, the test or criterion of a virgin, or that which intitles her to the denomination.

What most commonly passes among us for a test of virginity, is the hymen; and yet the most curious among the anatomists, are greatly divided, not only about the figure, substance, place, and perforations of this membrane, but even about the existence thereof; some positively affirming, and others as flatly denying it. See *Hymen*.

VIRGO, in astronomy, one of the signs or constellations of the zodiac, and the sixth according to order.

It is marked thus ♍, and in Ptolemy's catalogue consists of 32 stars, in Tycho's of 39, and in the Britannic of 89.

VIRILE, something that belongs or is peculiar to a man, or the male sex: thus the virile member is used for the penis: virile age, the strength and vigour of a man's age, viz. from thirty to forty-five years, being the age wherein we are equally removed from the extremes of youth and old of age.

VIRILIA, a man's genitals, or pi-vy members, including the penis and testes.

VIRTSUNGIANUS DUCTUS, in anatomy, a canal usually called ductus pancreaticus.

VIRTUAL, or **POTENTIAL**, something that has a power or virtue of act-

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ing or doing. The term is chiefly understood of something that acts by a secret invisible cause, in opposition to actual and sensible.

VIRTUE, *Virtus*, a term used in various significations. In the general it denotes power or perfection of any thing whether natural or supernatural, animate or inanimate, essential or accessory. But in its more proper or restrained sense, virtue signifies an habit, which improves and perfects the possessor and his actions.

In this sense virtue is a principle of acting or doing well and readily, and that either infused from above, such as are the theological virtues; or acquired by our own application, as the intellectual or moral virtues. For as there are two things in man from which all his actions proceed, viz. the understanding and the will, so the virtue by which he is perfected, or whereby he is disposed to do all things rightly, and to live happily, must be twofold, the one of the understanding, and the other of the will. That which improves the understanding is called intellectual, or dianoetic; and that, the will, moral and ethic; for since there are two things required, in order to live aright, viz. to know what should be done, and, when known, readily to perform it: and since man is apt to err various ways in each respect, unless regulated by discipline, &c. he alone can deport himself rightly in his whole course of life, whose understanding and will have obtained their utmost perfection.

* **VIRTUE**, in pagan worship, is represented as a goddess. Marcellus erected a temple to her, through which was the only passage to the temple of Fame, to shew that virtue was the only path to honour. Virtue was represented as an ancient matron, clothed in white, and sitting on a square stone. Plautus, however, mentions Virtue among the number of the gods; and in some of Gordian's medals, this imaginary deity is exhibited in the form of an old man with a long beard.

VIRTUES, in the celestial hierarchy, the third rank or choir of angels, being that in order between the dominations and powers: to these is attributed the power of working miracles, and of strengthening and reinforcing the inferior angels in the exercise of their functions.

VIRTUOSO, an Italian term lately introduced into English, signifying a man of curiosity and learning, or one who loves and promotes the arts and sciences; but

but among us the term seems to be appropriated to those who apply themselves to some curious and quaint, rather than immediately useful, art or study, as antiquaries, collectors of rarities of any kind, microscopical observers, &c.

VIRULENT, a term applied to any thing that yields a virus, that is, a contagious or malignant pus.

VIS, a Latin word, signifying force, or power; adopted by physical writers, to express divers kinds of natural powers, or faculties.

VISCERA, in anatomy, a term signifying the same with entrails, including the heart, liver, lungs, spleen, intestines, and other inward parts of the body.

VISCIDITY, or **VISCOSITY**, the quality of something that is viscid or viscous, that is glutinous and sticky, like bird-lime, which the Latins call by the name *viscum*.

VISIBLE, something that is an object of sight, or vision; or something whereby the eye is affected, so as to produce a sensation. See *Vision*.

The school-philosophers make two kinds of visibles, or visible objects: the one proper, or adequate; which are such as are no other way perceivable, but by sight alone: the other common, which are subject to divers senses, as the sight, hearing, feeling, &c.

VISIER, or **VIZIER**, an officer or dignitary in the Ottoman empire, of which there are two kinds; the first called by the Turks *visier-azem*, that is, grand visier, is the prime minister of state of the whole empire. He commands the army in chief, and presides in the divan or great council. Next to him are six other subordinate visiers, called visiers of the bench, who officiate as his counsellors, or assessors in the divan.

VISION, *Visio*, in optics, the act of seeing or perceiving external objects, by means of the organ of sight, the eye. See *Eye*.

VISION, among divines, is used for an appearance, which God occasionally sent his prophets and saints; either by way of dream, or in reality.

Such were the visions of Ezekiel, Amos, &c. the vision of St. Paul, lifted up to the third heaven, &c. of Joseph, by which he was assured of the purity of the Virgin, &c.

Beatific **VISION**, denotes the act whereby the angels and blessed spirits see God in paradise.

VISITATION, in law, an act of jurisdiction.

whereby a superior, or proper officer, visits some corporation, college, church, or other public or private house, to see that the laws and regulations thereof be duly observed. Among us visitation is that office performed by the bishop in every diocese once in three years; or by the archdeacon every year, by visiting the churches and their rectors throughout the whole diocese, &c.

VISUAL, something belonging to vision.

VITAL, in philosophy, an appellation given to whatever ministers principally to the constituting or maintaining of life in the bodies of animals: thus, the heart, lungs, and brain are called vital parts; and those operations of these parts, whereby the life of animals is maintained, are called vital functions.

VITRIFICATION, in chemistry, the converting a body into glass, by means of fire. See *Glass*.

Of all bodies, fern-ashes, sand, pebbles, &c. vitrify the most readily; and accordingly, it is of these that glass is principally made.

VITRIOL, *Vitriolum*, a saline crystalline concrete, composed of metal united with a certain acid called the vitriolic acid. There are three metals with which this acid is found naturally combined, zinc, copper, and iron: with the first it forms a white, with the second a blue, and with the third a green salt.

VITRIOLATED, among chemists, something that has vitriol infused in it.

VITRIOLIC, an appellation given to whatever abounds with, or partakes of, the nature of vitriol: thus such fossil bodies as contain vitriol, are called vitriolic minerals, or ores of vitriol; as the pyrites, chalcitis, misy, fory, melanteria, marcasites, &c.

VITTA, in anatomy, that part of the amnios which sticks to an infant's head, when just born.

VITUS'S DANCE *Chorea Sancti Viti*, in medicine, a sort of convulsion, which boys and girls are subject to, from the age of ten years, to the time of puberty: it discovers itself first by a kind of lameness, or an instability of one of the legs, which they draw after them in a ridiculous manner; nor can they hold the arm of the same side still for a moment; and before they can bring a cup to their mouth, they use a thousand odd gesticulations. In a convulsive paroxysm, the limbs are strongly agitated; the hands are sometimes put behind them, and soon

after they seem to be beating the air; and their legs will be drawn hither and thither, as if they were dancing some antic dance.

VIVA VOCE, a Latin phrase frequently used in English writers, and literally signifying by word of mouth.

VIVIFICATION, in medicine, the art of vivifying; that is, of contributing to the action that gives life, or maintains life.

VIVIPAROUS, *Viviparus*, in natural history, an epithet applied to such animals as bring forth their young alive and perfect, in contradistinction to them that lay eggs, which are called oviparous animals.

VIVO, in architecture, the shaft or fust of a column.

The term is also used in a more particular sense for the naked of a column, or other part.

ULCER, *Ulcus*, in surgery, a solution of the soft parts of our bodies, together with the skin, produced by some internal cause, as an inflammation, abscess, or acrimonious humours. But wounds which become inveterate, and even contusions, when difficult of cure, come within this definition, and pass, at length, into ulcers, and are commonly so called.

ULCERATION, or **EXULCERATION**, in surgery, a little hole in the skin, caused by an ulcer.

ULIGINOUS, in agriculture, an appellation given to a moist, moorish, and fenny soil.

ULLAGE, in gauging, is so much of a cask, or other vessel, as it wants of being full. See *Gauging*.

ULMUS, the elm, in botany. See *Elm*.

ULNA, in anatomy, one of the bones of the fore-arm, reaching from the elbow to the wrist: it is big at its upper extremity, and grows gradually smaller towards its lower end.

ULNA, an ell. See the articles *Ell* and *Measure*.

ULNARIS, in anatomy, the name of two muscles of the carpus, or hand; one called ulnaris internus, which is a flexor muscle terminating in the internal ossicle of the carpus; and the other, called ulnaris externus, is an extensor muscle, terminating in the metacarpal bone that supports the little finger.

ULTRAMARINE, a beautiful blue colour used by the painters prepared from lapis lazuli, by calcination. See *Lazuli*.

ULTRAMUNDANE, beyond the world; is that part of the universe sup-

posed to be without, or beyond, the limits of our world, or system.

ULVA, in botany, a genus of water plants, belonging to the cryptogamia class; the fructifications of which are disposed in membranous bladders, without the leaf.

UMBEL, *Umbella*, among botanists, is the extremity of a stalk or branch divided into several peduncles, or rays, beginning from the same point, and opening in such a manner as to form an inverted cone.

UMBELLIFEROUS PLANTS, those whose flowers are produced in an umbel, on the top of the stalks, somewhat representing an umbrella.

UMBER, or **UMBRE**, among painters, &c. a kind of dry dusky-coloured earth, which diluted with water, serves to make a dark brown colour, usually called with us, a hair colour. It is called umber, from *umbra*, a shadow, as serving chiefly for the shading of objects; or, rather, from *Umbria*, a country of Italy, whence it is used to be brought.

UMBILICAL, among anatomists, something relating to the umbilicus, or navel.

UMBILICAL POINTS, in mathematics, the same with foci. See *Focus*.

UMBILICUS, the naval, in anatomy.

UMBRE, or **UMBER**, among painters. See *Umbre*.

UMPIRE, a third person chosen to decide a controversy left to arbitration. See *Arbitration*.

UNCASING, among sportsmen, signifies the cutting up, or slaying of a fox.

UNCLE, in algebra, the numbers prefixed before the letters of the members of any power produced from a binomial, residual, or multinomial root. Thus, in the fourth power of $a + b$, viz. $a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$, the uncies are 4, 6, 4; being the same with what others call co-efficients.

UNCTION, *Unctio*, the act of anointing or rubbing with oil, or other fatty matter.

The cure of divers wounds, ulcers, &c. greatly depend upon repeated unctions with oil, unguents, cerates, &c. For the mercurial unction applied to bring on a salivation, see *Salivation*.

UNCTION, in matters of religion, is used for the character conferred on sacred things, by anointing them with oil.

The Romish church has advanced extreme unction to the dignity of a sacrament. It is administered to none but such

such as are afflicted with some mortal disease, or are in a decrepit age. It is refused to impenitent persons, as also to criminals sentenced to die, because they are not in a state of death by disease or any other infirmity. The parts to be anointed are, the eyes, the ears, the nostrils, the mouth, the hands, the feet, and the reins: but men only are anointed in the part last mentioned. The laity are anointed in the palms of the hands; but priests on the back of it, because the palms of their hands have been already consecrated by ordination.

When a dying person is to receive the sacrament of extreme unction, the priest prepares seven balls of cotton to wipe the parts anointed; some crumbs of bread, to rub his fingers with, water to wash them, a napkin to wipe them, and a taper to light him during the ceremony. In entering the sick person's apartment, he bids peace to the house, and, having set down the vessel of holy oil on the table, he gives the dying person the cross to kiss. Then he sprinkles him with holy water, and exhorts him to repentance and confession of his sins. Before the ceremony of anointing is performed, all the persons present fall down upon their knees, and repeat the penitential psalms and litanies. Then the unction is performed in this manner: the priest dips the thumb of his right hand, and sometimes a little spatula, into the vessel, and anoints therewith the above-mentioned parts in the form of a cross. The clerk lights him with a consecrated taper, and holds a basin or dish in which the pieces of cotton are laid. The priest begins with anointing the sick man's eyes, saying, "May God, by his holy anointing pardon you the sins you have committed by the eyes." In like manner he proceeds to the other parts, changing the form of words according to the part he anoints. The anointing being ended, the priest repeats some prayers, and, when he goes away leaves a crucifix with the sick person, that the sight of the dying Saviour may administer some consolation to him.

UNDECAGON, is a regular polygon, of eleven sides. See *Polygon*.

UNDERSTANDING, is defined by the Peripatetics to be a faculty of the reasonable soul, conversant about intelligible things, considered as intelligible.

UNDERSTANDING is also used for the act, exercise, or exertion, of this faculty, or the action whereby the mind

knows things, or represents them in idea to itself.

UNDERTAKERS, were anciently such persons as were employed by the king's purveyors, and acted as their deputies. At present the name is chiefly used for upholders, or persons who furnish out funerals, and also for such who undertake any great work.

UNDERWOOD, coppice, or any wood that is not accounted timber.

UNDULATION, in physics, a kind of tremulous motion or vibration observable in a liquid, whereby it alternately rises and falls like the waves of the sea.

UNGUENT, or **OINTMENT**, *Un-quentum*, in medicine and surgery, a topical remedy or composition, chiefly used in the dressing of wounds and ulcers.

Unguents are divided into simple and compound, though it so happens that some of the former are considerably compounded; and amongst the latter there are some simple unguents, and others very little compounded. Unguents, liniments, and cerates, are external forms applied on divers parts of the body, both to cure, to ease, and to relieve them.

These only differ from each other in their consistence; with regard to which, unguents hold the medium, being stiffer than liniments, but softer than cerates. Oils are the bases of all the three, to which are added wax, axungia, and several parts of plants, animals, and minerals, both on account of the virtues they furnish, and to give a consistence to the oils, and to keep them longer on the part, that they may have more time to act. See *Cerate* and *Liniment*.

UNGUIS, a Latin term, signifying a nail of the hand or foot.

UNGUIS PANNUS, or **PTERIGIUM**, in medicine and surgery, a preternatural membrane formed upon the coats of the eye, so as to extend itself over the cornea and pupil, and obstruct the sight.

UNGUIS, in anatomy, is applied to two bones of the nose, being as thin as scales, and resembling the nail; whence their name.

UNGUIS, among botanists, the narrow part where the petals are inserted, when several go to make up the flower, as the broader part towards the end is called *bractea*.

UNGULA, in geometry, the section of a cylinder cut off by a plane passing obliquely through the plane of the base and part of the cylindric surface.

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UNICORN, an animal, famous among the ancients, but looked on by the moderns as fabulous, denominated from its distinguishing characteristic of having one horn only, which is represented as five palms long, and growing in the middle of the forehead. It is also said to be about the size of a horse: its hair short, and of a darkish brown colour, very timorous, and therefore keeping mostly in the woods. Some will have it an amphibious animal, and its horn moveable at pleasure.

The unicorn is one of the supporters of the British arms. It is represented by heralds passant, and sometimes rampant. When in this last action, as in the British arms, it is properly said to be saillant. Argent, an unicorn sejant fable, armed and unguled, or, borne by the name of Harding.

UNICORN-FISH, in natural history, the name of a fish of the whale kind, remarkable for having a horn growing out in its nose, in the manner of the supposed unicorn's horn, as described by many too credulous authors.

UNIFORM denotes a thing to be similar, or consistent, either with another thing, or with itself in respect of figure, structure, proportion, and the like; in which sense it stands opposed to disform.

UNIFORMITY, a similitude, or resemblance, between the parts of a whole; such is that we meet with in figures of many sides and angles respectively equal, and answerable to each other.

UNION, a junction, coalition, or assemblage of two or more different things in one.

UNION, among painters, expresses a symmetry and agreement between the several parts of a painting.

UNION, in an ecclesiastical sense, denotes a combining or consolidating of two churches into one: there are two kinds of this union, as when one church is made subject to another, and one parson is made rector of both; and where a conventual church is made a cathedral.

UNION, or **The UNION**, by way of eminence, is more particularly used to express the act whereby the two separate kingdoms of England and Scotland were incorporated into one, under the title of the kingdom of Great-Britain. This happy union, in vain attempted by king James I. was at length effected in the year 1707, by the general consent of the queen and the estates of each realm. The chief

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articles of this union are, That the two kingdoms should be united into one kingdom, by the name of Great-Britain: that they, in consequence thereof, be represented by one parliament, of which sixteen peers and forty-five commoners are to be elected for Scotland, and have the same privileges with those of England: that the subjects of either nation shall have equal freedom of trad, and be liable to the same customs, and the like laws for public government, &c. The kirk, or church of Scotland, is confirmed; and the courts of justice are to remain the same as they were before the union, yet subject to regulation, &c. A court of exchequer is also erected in Scotland, to be a court of record, revenue, and judicature for ever; and barons of the said court are appointed, who shall be the judges there, &c.

UNISON, in music, the effect of two sounds which are equal in degree of tune, or in point of gravity and acuteness.

UNIT, **UNITÉ**, or **UNITY**, in arithmetic, the number one, or one single individual part of discrete quantity.

UNITY, in poetry.—The critics require three unities to be observed in every regular play, viz. those of action, time, and place.

UNITY, the abstract, or quality, which constitutes, or denominates, a thing *unum*, or one.

UNITY, among divines.—The Romanists and the reformed dispute, whether or no the church be one single body, all the numbers of which are joined together, either really, or in inclination; so that whatever does not appertain to that body, is no part of the church: which is what they call the unity of the church; and which the Romanists maintain to be restrained to one single society, or one communion, under one visible head; and out of which the protestants are excluded!

UNIVALVE Shells, in natural history, a term used to express one of the three general classes of shell-fish; the other two are the bivalves and multivalves. The univalve shells are those which consist only of one piece, not of two or more joined together.

UNIVERSAL, something common to many things; or it is one thing belonging to many, or all things.

UNIVERSALITY, that quality which denominates a thing universal.

UNIVERSE, a collective name, signifying the whole world, or the assemblage of heaven and earth with all things therein.

UNIVERSITY, a collective term, applied to an assemblage of several colleges, established in a city, or out-town, wherein are professors in the several sciences, appointed to teach them to students; and where degrees or certificates of study in the divers faculties are taken up. In each university four faculties are usually taught; theology, medicine, law, and the arts and sciences. They are called universities, or universal schools, because the four faculties are supposed to take in the whole compass of study.

In the eye of the law, an university is held a mere lay body, or community; though, in reality, it be a mixed body, composed partly of laymen, and partly of ecclesiastics. Universities had their first rise in the XIIIth and XIIIth centuries. Those of Paris and Bologna pretend to be the first that were set on foot; but then they were on a different footing from the universities among us. Our own universities, of Oxford and Cambridge, seem entitled to the greatest antiquity of any in the world; and Baliol and Merton colleges, in Oxford, and St. Peter's in Cambridge, all made colleges in the XIIIth century, may be said to be the first regular endowments of this kind in Europe. For though University college in Cambridge had been a place for students ever since the year 872, yet this, like many of the ancient colleges beyond sea, and Leyden to this day, was no proper college; but the students, without any distinction of habit, lived in citizens houses, having only meeting places to hear lectures and disputes. In after times, there were houses built for the students to live in society; only each to be at his own charge, as in the inns of court: these, at first, were called inns, but now halls. At last, plentiful revenues were settled on several of these halls, to maintain the students in diet, apparel, &c. and these were called colleges. See *College*.

UNIVOCAL, in the schools, is applied to two or more names, or terms, that have but one signification, in opposition to equivocal, which is where one term has two or more significations.

UNLAWFUL, illegal, something prohibited by, or contrary to, the terms of law, either divine or human.

UNLAWFUL ASSEMBLY, the meeting of three or more persons together, by

force to commit some unlawful act, as to assault any person, to enter his house or land, &c. and thus abiding together, whether they attempt the execution or not.

UNLIMITED, or **INDETERMINATE PROBLEM**, is such a one as is capable of infinite solution.

UNMOOR, a term used at sea: when a vessel which was riding at anchor weighs the same, or gets it up, in order to sail, they say she is unmooring.

VOCABULARY, in grammar, denotes the collection of the words of a language, with their significations, otherwise called a dictionary, lexicon, or nomenclature.

VOCAL, something that relates to the voice or speech: thus vocal music is that set to words, especially verses, and to be performed by the voice, in contradistinction to instrumental music, composed only for instruments, without singing. See *Voice*, *Verse*, &c.

VOCATIVE, in grammar, the fifth state or case of nouns. When we name the person we are speaking to, or address ourselves to the thing we are speaking of, as if it were a person, the noun, or name, requires a new relation, which the Latins and Greeks express by a new termination, called the vocative: as from *Dominus*, a Lord, is formed the vocative *Domine*, O Lord. In English, and most of the modern languages, the vocative is expressed in nouns that have an article in the nominative, by omitting that article; as *The Lord is my hope*; *Lord, thou art my hope*; though, on many occasions we use an interjection.

VOICE, *Vox*, a sound produced in the throat and mouth of an animal, by an apparatus of instruments for that purpose. See *Sound*.

Voices are either articulate or inarticulate. Articulate voices are those of which several conspire together to form some assemblage or little system of sounds; such are the voices expressing the letters of an alphabet, numbers of which joined together, form words. Inarticulate voices are such as are not organized, or assembled into words; such is the barking of dogs, the braying of asses, the hissing of serpents, the singing of birds, &c.

The formation of the human voice, with all the varieties thereof observed in speech, music, &c. makes a very curious article of inquiry; and the apparatus and organism of the parts administering thereto, is something exceedingly surprizing. Those parts are the trachea or wind-pipe, thro'

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thro' which the air passes and repasses into the lungs; the larynx, which is a short cylindric canal at the head of the trachea; and the glottis, which is a little oval cleft or chink left between two semi-circular membranes, stretched horizontally within the larynx; which membranes, though capable of joining close together, do generally leave an interval, either greater or less, between them, called the glottis.

VOICE, in grammar, a circumstance in verbs, whereby they come to be considered as either active or passive. i. e. either expressing an action impressed on another subject, as, *I beat*, or receiving it from another, as, *I am beaten*.

The Greeks have a third voice, the mediast voice, thus denominated, because it has sometimes an active and sometimes a passive signification: though generally it is of an active signification.

VOICE in matters of election, denotes a vote or suffrage.

VOIDANCE, or **VACANCY**, in the canon law, a want of an incumbent upon a benefice, &c.

VOIDER, in heraldry, one of the ordinaries whose figure is much like that of a stalk or branch, only that it does not bend so much.

VOIDING, or **EVACUATING**, in medicine. See *Evacuation*.

VOL, among heralds, signifies the two wings of a fowl joined together, borne in armoury as being the whole that makes the flight. Accordingly, a demi-vol is a single wing.

VOLA, the palm, or inside of the hand, comprehended between the fingers and the wrist.

VOLANT, in heraldry, is when a bird in a coat of arms is drawn flying, or having its wings spread open.

VOLATILE, in physics, is commonly used to denote a mixed body whose integral parts are easily dissipated by fire or heat; but it is more properly used for bodies whose elements or first component parts are easily separated from each other, and dispersed in air.

VOLATILISATION, or **VOLATILIZATION**, the act of rendering fixed bodies volatile, or of resolving them by fire into a fine subtle vapour or spirit, which easily dissipates and flies away. All bodies, even the most fixed, as gold, may be volatilized; either of themselves, or with the admixture of some volatile substance, or spirit, by distillation or sublimation.

VOLLEY, a military salute, made by

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discharging a great number of fire-arms at the same time.

VOLT, or **VOLTE**, in the manege, a round or circular tread; and hence, by the phrase, to make volts, is understood a gait of two treads, made by a horse going sideways round a center, in such a manner that these two treads make parallel tracks, one larger, made by the fore-feet, and another smaller, made by the hind-feet, the croud approaching towards the center, and the shoulders bearing outwards.

VOLUME, in matters of literature, a book, or writing, of a just bulk to be bound by itself. The name is derived from the Latin *volvere*, to roll up; the ancient manner of making up books being in rolls of bark or parchment.

VOLUNTIARY, in music, a piece played by a musician, extempore, according to his fancy. This is often used before he begins to set himself to play any particular composition, to try the instrument, and to lead him into the key of the piece he intends to perform.

VOLUNTEERS, in the military art, persons who, of their own accord, and at their own expence, serve in the army.

VOLUTA, in natural history, a genus of univalve shells with an oblong mouth, a ciavicle sometimes erect and sometimes depressed, and sometimes coronated at top. To this genus belong the admiral shells, tiger shells, &c.

VOLUTE, *Voluta*, in architecture, a kind of spiral scroll, used in the Ionic and Composite capital: whereof it makes the principal characteristic and ornament.

VOMIT, or **EMETIC**, in pharmacy. See *Emetic*.

VOMITING, in medicine, a retrograde spasmodic motion of the muscular fibres of the oesophagus, stomach, and intestines, attended with strong convulsions of the muscles of the abdomen and diaphragm, which, when gentle, create a nausea, when violent, a vomiting. These convulsive disorders proceed from the immoderate quantity or acrimony of the food; from poisons; from some injury of the brain, as a wound, contusion, compression, or inflammation of that part, from an inflammation of the diaphragm, stomach, intestines, spleen, liver, kidneys, pancreas, or mesentery; from an irritation of the gula; from a disorderly motion of the spirits, by unaccustomed agitations in a coach, ship, or otherwise, or from the idea of something nauseous.

The two principal curative indications

to be observed are, first, to quiet and compose the convulsive and unruly motion of the stomach: and, secondly, to oppose and subdue the material causes of the disorder.

VORTEX, in meteorology, a whirlwind, or sudden, rapid or violent motion of the air in gyres or circles.

Vortex is also used for an eddy or whirlpool; or a body of water, in certain seas or rivers, which runs rapidly around, forming a sort of cavity in the middle.

VOTE, the suffrage or resolve of each of the members of an assembly, where any affair is to be carried by a majority; but more particularly used for the resolves of the members of either house of parliament. See *Parliament*.

VOUCHER, in law, is a person called into court, to make good another's warranty, who is either to defend the right against the demandant, or yield him other lands to the value, &c.

This extends to lands or tenements of freehold or inheritance, but not to any thing personal or mixed.

Voucher also signifies a receipt or acquittance in cases of account.

VOW, a solemn and religious promise, or oath.

The use of vows is found in most religions. They made a considerable part of the pagan worship; being made, either in consequence of some deliverance, under some pressing necessity, or for the success of some enterprize.

Pilgrimages, and other acts of devotion, among Christians, have, in all ages, been undertaken in consequence of vows; and the monastic life is supported thereby, the religious obliging themselves, by solemn vows, to chastity, poverty, obedience, and other observances. The practice of devoting one's self to the service of some saint was formerly much in vogue, and is still practised in several catholic countries. A yearly tribute was paid to the patron-saint; and the vassal often bound himself and his whole posterity, or at least his children.

VOWEL, in grammar, a letter which affords a complete sound of itself, or a letter so simple as only to need a bare opening of the mouth to make it heard, and to form a distinct voice.

The vowels are six in number, viz. A, E, I, O, U, Y, and are called vowels in contradistinction to certain other letters, which, depending on a particular application of some part of the mouth, as the teeth, lips, or palate, can make no per-

fect sound without an opening of the mouth, that is, without the addition of a vowel, and therefore called consonants. Grammarians reckon also eight semi-vowels, viz. F, H, L, M, N, R, S, Z, so denominated because they approach nearer a vowel in the pronunciation. Of these semi-vowels four, viz. L, M, N, R, are called liquids.

UPRIGHT, in architecture, a representation or draught of the front of a building, called also an elevation or orthography.

UPRIGHT, in heraldry, is used in respect of shell fishes, as crevices, &c. when standing erect in a coat. Inasmuch as they want fins, they cannot, according to Guillim, be properly said to be hauriant; that being a term appropriated to scaly fishes.

URACHUS, in anatomy, a membranous canal in the fetus of quadrupeds in general, of a pyramidal figure, extended immediately from the fundus of the bladder to the navel, and after passing thro' this, it is by degrees enlarged, and makes its way into the allantois at right angles each way, or nearly so, and conveys the urine from the bladder into the cavity of this membrane.

URDE, or *Urdée*, in heraldry. A cross *urdée* seems to be the same with what we otherwise call *chicche*, or *chicchee*.

URETERS, in anatomy, two membranaceous tubes or pipes, nearly cylindric in figure, and of about the thickness of a quill: but their diameter is very uncertain.

They arise from the kidneys, one from each, and terminate in the urinary bladder. At their origin in the kidneys, they are expanded into the form of a funnel, and this expansion makes the pelvis of the kidneys.

URETHRA, in anatomy, a membranaceous tube or canal, of a cylindric figure, arising from the neck of the bladder, and continued to the pudendum, serving to discharge and carry off the urine and semen. The length of the urethra is very different in both sexes. In man it is twelve or thirteen inches, from the neck of the bladder to the extremity of the glans. It is situated in a kind of narrow furrow, formed between the corpora cavernosa, in the bottom or lower part of the penis. It does not run perfectly straight, but is bent in a very singular manner. Its cavity is as large as that of a goose quill. It is composed of

two robust membranes, an exterior and interior; their substance is thin and tough, and between them there is a spongy or cavernous matter, in which some authors pretend to have discovered glands, but this is uncertain. The bulb of the urethra, is that part of it next to the prostatic; it is much thicker than the rest of the tube; and is about an inch long, and in some measure resembles a walnut. It is of a thick and spongy texture. The interior surface of the urethra is full of roundish and oblong foraminulae and furrows, out of which there may often be pressed a thick viscous fluid, the use of which is to lubricate the urethra, and to defend it from the acrimony of the urine. See *Penis*, &c. The urethra or urinary passage in women, usually called meatus urinarius, is situated straight under the clitoris, and shews itself by a little eminence. Its length is about two fingers breadth; its diameter is greater than that in man, but somewhat narrower at the end than elsewhere. It is capable of great dilatation. There are in it certain little ducts, which convey to its inner surface a mucous humour, for lubricating and defending it from the acrimony of the urine, like those in man; but their origin is uncertain.

URINAL, in medicine, a vessel fit to receive and hold urine, and used accordingly for the convenience of sick persons. It is usually of glass, and crooked; and sometimes it is filled with milk to assuage the pain of the gravel.

URINAL, in chemistry, an oblong glass vessel, closed for making solutions, and so called from its resemblance to the glasses in which urine is set to settle for the inspection of the physician. See the preceding article.

URINE, *Urina*, a serous and saline fluid, of a citron colour, separated from the blood, and carried by the emulgent arteries to the kidneys, from whence it descends to the bladder by the ureters, and is, from time to time, emitted thence by the canal of the urethra.

For the diabetes, or that disease wherein the urine comes away crude, exceeding the quantity of the liquids drank, see *Diabetes*.

URINE, in agriculture, is of excellent use as a manure. The experienced in agriculture and gardening, prefer urine for land, trees, &c. before dung, as penetrating better to the roots; and removing divers infirmities of plants.

URINOUS SALTS, are the same with what we otherwise call alkali salts, or alkalies.

URN, a kind of vase, of a roundish form, but biggest in the middle, like the common pitchers, now seldom used but in the way of ornament over chimney-pieces, in buffets, &c. The great use of urns among the ancients was to preserve the ashes of the dead after they were burnt; for which reason they were called cineraria, and urnæ cinerariæ, and were placed sometimes under the tombstone whereon the epitaph was cut, and sometimes in vaults in their own houses. Urns were also used at their sacrifices to put liquid things in.

URSA, the Bear, in astronomy, a name common to two constellations of the northern hemisphere, near the pole, distinguished by major and minor. The ursa major, or the great bear, according to Ptolemy's catalogue, consists of thirty-five stars; according to Tycho's of fifty-six; but in the Britannic catalogue we have two hundred and fifteen.

The ursa minor, or little bear, called also Charles's wain; and by the Greeks cynosura; by its neighbourhood to the north pole, gives the denomination $\alpha\mu\epsilon\tau\epsilon\omega$, bear, thereto. Ptolemy and Tycho make it to consist of eight stars, but Flamsteed of fourteen.

URSULINES, in church history, an order of nuns, founded originally by St. Angela of Brescia, in the year 1537, and so called from St. Ursula, to whom they were dedicated.

URTICA, Nettle, in botany, a genus of plants, the flower of which is of the apetalous kind, being composed only of a number of stumina placed in a cup. These are barren, and the seeds grow on other plants of the same species, which have no flowers, and are contained either in round globules, or bivalve capsules, or in long tufts.

URTICA Marina, in zoology, the name of a remarkable genus of fishes, so called from their affecting the skin, on touching them, with a painful sensation like that of stinging of nettles.

USANCE, *Uso*, in commerce, is a determinate time fixed for the payment of bills of exchange, reckoned either from the day of the bills being accepted, or from the day of their date; and thus called, because regulated by the usage and custom of the places whereon they are drawn.

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U S Q

USHER, an officer or servant, who has the care and direction of the door of a court, hall, chamber, or the like. In the king's household there are two gentlemen ushers of the privy-chamber, appointed to attend the door, and give entrance to persons that have admittance thither; four gentleman-ushers, waiters; and eight gentlemen-ushers, quarters-waiters in ordinary.

USHER, also signifies an officer of the court of Exchequer, of which there are four who attend the barons and chief officers of that court at Westminster, as also juries, sheriffs, &c. at the pleasure of the court. There is also an usher of the court of Chancery.

USHER of the Black-Rod, the eldest of the gentlemen-ushers, daily waiters at court, whose duty is to bear the rod before the king at the feast of St. George, and other solemnities; he has also the keeping of the chapter-house door, when a chapter of the order of the garter is sitting; and, in time of parliament, attends the house of peers, and takes delinquents into custody. He wears a gold badge, embellished with the ensigns of the order of the Garter.

USNEA, in botany, a genus of mosses, wholly destitute of leaves, and composed only of long slender filaments, or stalks, which are usually solid, rigid, and of a cylindric figure. The whole plants are fixed in the manner of mistletoe to the barks of trees.

USQUEBAUGH, a strong compound liquor, chiefly taken by way of dram.

There are several different methods of making this liquor; but the following is esteemed one of the best: To two gallons of brandy, or other spirits, put a pound of Spanish-liquorice, half a pound of raisins of the sun, four ounces of currants, and three of sliced dates, the tops of baum, mint, savory, thyme, and the tops or the flowers of rosemary, of each two ounces; cinnamon and mace, well bruised, nutmegs, anniseeds, and coriander-seeds, bruised likewise, of each four ounces; of citron, or lemon and orange-peel, scraped, of each an ounce; let all these infuse forty-eight hours in a warm place, often shaking them together: then let them stand in a cool place for a week: after which the clear liquor is to be decanted off, and to it is to be put an equal quantity of neat white port, and a gallon of canary; after which it is to be sweetened with a sufficient quantity of double-refined sugar.

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U S U

USTION, in pharmacy, the preparing of certain substances by burning them.

USURER, a person charged with a habit or act of usury. See *Usury*.

USURIOUS CONTRACT, is any bargain or contract, whereby a man is obliged to pay more interest for money than the statute allows.

USURPATION, in law, an injurious using or enjoyment of a thing for continuance of time, that belongs of right to another.

USURY, *Usura*, in the general, denotes a gain or profit, which a person makes of his money, by lending the same; or it is an increase of the principal, exacted for the loan thereof; or the price a borrower gives for the use of a sum credited to him by the lender, called also interest; and in some ancient statutes, dry exchange.

The word usury is generally taken in an evil sense, viz. for an unlawful profit which a person makes of his money; in which sense it is, that usury is forbidden by the civil and ecclesiastical, and even by the law of nature.

By stat. 12 Ann. c. 16. which is called, The Statute against excessive Usury, it is ordained, that no person shall take for the loan of any money, or other thing, above the value of five pounds for the forbearance of one hundred pounds for a year; and so in proportion for a greater or lesser sum; and it is declared, that all bonds, contracts, and assurances, made for payment of any principal sum to be lent on usury, above that rate, shall be void; and that whosoever shall take, accept, or receive, by way of corrupt bargain, loan, &c. a greater interest than that last above-mentioned, shall forfeit treble the value of the money lent; and also, that scriveners, solicitors, and drivers of bargains, shall not take or receive above five shillings for the procuring the loan of one hundred pounds for one year, on pain of forfeiting twenty pounds, &c.

There can be no usury without a loan, between which and a bargain the court has distinguished: and though a person is to pay double the sum borrowed, &c. by way of penalty, for the non-payment of the principal debt, it is not usury; so it also is in respect to the grant of an annuity for lives, or on condition, where it exceeds the usual interest, and the proportion attending contracts of this kind. Even if one secures a large interest and principal, and it is at the will of the party who is to pay; or where it happens that

that both the principal money and extraordinary interest are in hazard, or that a person may have less than his principal; as when a bond is made to pay money upon the return of a ship from sea, &c. either of these casts are not held to be usury.

In an action brought for usury, the statute made against it must be pleaded; and in pleading an usurious contract, as a bar to an action, the whole matter is to be set forth specially, because it lies within the parties own privacy; yet on an information on the statute for making such contract, it is sufficient to mention the corrupt bargain generally; because matters of this kind are supposed to be privately transacted; and such information may be brought by a stranger. 1 Hawk. P. C. 248.

Likewise upon an information on the statute against usury, he that borrows the money may be a witness, after he has paid the same.

UTENSIL, *Utensile*, a little domestic moveable, belonging principally to a kitchen: such are pots, pans, &c.

Utensils are more particularly used in war, for the moveables which the host is obliged to furnish the soldiers quartered with him; which are, a bed with bed-clothes, a pot, and a spoon.

UTERINE, something belonging to the uterus, or womb of a woman.

Furor UTERINUS, in medicine, denotes a kind of madness, attended by lascivious speeches and gestures, and an invincible inclination to venery. See *Furor*.

UTERUS, the womb, in anatomy, a hollow body, called also the matrix, of a form approaching to that of a pear, situated between the bladder and the rectum, and destined to the office of generation, for the containing the fetus. It is connected in the anterior part with the vagina, and at its lateral part by the ligaments, lata and rotunda, being loose in its hinder part.

UTILE, a Latin term, signifying profitable or useful; in which sense it is sometimes used by English writers.

UTRECHT, a handsome celebrated town of the United Provinces, capital of a province of the same name, with a famous university. It is large, well fortified, of a square form, and about three miles in circumference, without its four suburbs, which are considerable. There are a great number of churches, as also hospitals for orphans and foundlings; and

old men and women. All the avenues to this city are very handsome, and the environs are full of gardens, walks, and groves, which, added to the purity of the air, render Utrecht one of the most agreeable places to live in, in these parts, and accordingly a great many people of distinction resort hither. Here the union of the Seven Provinces was begun in 1579. It is seated on the ancient channel of the Rhine, twenty miles east of Amsterdam. Long. 22. 36. E. Lat. 52. 8. N.

UVEA, in anatomy, the third or outermost coat of the eye. See *Eye*.

VULCAN, in pagan worship, the god of fire, was the son of Jupiter and Juno, and was so remarkably deformed, that his father threw him down from heaven to the isle of Lemnos, in which fall he broke his leg: he there set up his forge and taught men how to soften and polish brass and iron. Thence he removed to the Liparian isles, near Sicily, where, by the assistance of the Cyclops, he made Jupiter's thunderbolts and armour for the other gods. He had a passion for Minerva, and by Jupiter's consent made his addresses to her, but without success. He was, however, more fortunate in his suit to Venus, who, after her marriage, chose Mars for her gallant, when Vulcan exposed them to the ridicule of the other gods, by taking them in a net. He had several names, and was called Lemnius, from the isle of Lemnos; Mulciber, or Mulcifer, from his art of softening steel and iron; and, by the Greeks, Hephaistos, from his delighting in flames. In the ancient medals of the Greeks and Romans, he is represented as a lame, deformed, and squalid man, working at the anvil, and attended by the Cyclops, or by some other god or goddess who comes to ask his assistance. But the Egyptians represented him proceeding out of an egg placed in the mouth of Jupiter, to express the radical and natural heat diffused through all created beings.

VULCANO, or **VOLCANO**, in natural history, a burning mountain, or one that vomits forth fire, flame, ashes, cinders, &c.

VULGATE, a very ancient Latin translation of the Bible, and the only one the church of Rome acknowledges to be authentic. The vulgate of the Old Testament was translated, almost word for word, from the Greek of the Septuagint: the author of it is not known, or so much as guessed at. It was a long time known by the name of the Italic Version, as being

of great antiquity in the Latin church. It was commonly in use, before St. Jerom made a new one from the Hebrew. St. Austin preferred this vulgate before all the other Latin versions, as rendering the words and sense of the sacred text more closely and justly than any of the rest. It has been since corrected from the emendations of St. Jerom; and it is this mixture of the ancient Italic version with the corrections of St. Jerom, that is now called the vulgate, and which the council of Trent has declared to be authentic.

VULNERARY, in medicine, an epithet given to remedies proper for the cure of wounds and ulcers.

VULTURE, a genus of birds, with four toes on each foot, three of which are placed forwards; the neck is long, and almost bare of feathers; the legs are covered with feathers down to the feet, or nearly so; and under the throat there is a space covered with hairs instead of feathers, the head also in many species is naked, and has at the most only a downy matter on it instead of feathers; and the under part of the wings is downy.

VULVA, in anatomy, a name given as well to the uterus, or womb, as to the cunnus or pudendum muliebre.

UVULA, in anatomy, a round, soft, spongy body, like the end of a child's finger, suspended from the palate, near the foramina of the nostrils, perpendicularly over the glottis. Its use is to break the force of the cold air, and prevent its entering too precipitately into the lungs. It is formed of a duplicature of a membrane of the palate; and is called, by some authors, columella, and by others gurgulio.

It is moved by two pair of muscles, and suspended by as many ligaments.

UVULARIA, in botany, a genus of plants, whose flower consists of six oblong, erect, lanceolated petals, with an oblong nectarium cut into the base of each petal; the stamina are six very short filaments; topped with long erect anthers; the fruit is an ovato-oblong trilobular capsule, containing many roundish compressed seeds.

UXOR, among chemists, signifies the mercury of metals. See *Mercury* and *Metal*.

W.

W The twenty-first letter of the English alphabet, and composed, as its name implies, of two V's. It was not in use among the Hebrews, Greeks, or Romans, but chiefly peculiar to the northern nations, the Teutones, Saxons, Britons, &c. but still it is not used by the French, Italian, Spaniards, or Portuguese, except in proper names, and other terms borrowed from languages in which it is originally used.

This letter is of an ambiguous nature, being a consonant at the beginning of words, and a vowel at the end. It may stand before all the vowels except *u*, as *water, wealth, winter, wonder*. It may also follow the vowels *a, e, o*, and unites with them into a kind of double vowel, or diphthong, as in *saw, few, cow*, &c. It also goes before *r*, and follows *i*, and *ab*, as in *wrath, swear, thwart*: it goes before *b* also, though in reality it is

founded after it, as in *when, what*, &c. In some words, it is obscure, as in *shadow, widow, fellow*, &c.

WADD, or **WADDING**, is a stopple of paper, hay, &c. forced into a gun upon the powder, to keep it close in the chambers; or to put up close to the shot, to keep it from rolling out.

WAST. To waste a ship, is to convoy her safe, as men of war do merchant-ships. To make a wast, is to hang out some coat, sea-gown, or the like, on the main shrouds of the ship, as a signal for people to come aboard, and signifying that the ship is in great distress.

WAFERS, or **SEALING WAFERS**, are made thus: Take very fine flour, mix it with glair of eggs, isinglass, and a little yeast; mingle the materials; beat them well together, spread the batter, being made thin with gum-water, on even tin plates, and dry them in a stove

W A L

then cut them out for use. You may make them of what colour you please, by tinging the paste with Brazil or vermilion for red; indigo or verditer, &c. for blue; saffron, turmeric, or gamboge, &c. for yellow.

WAGGON, a vehicle or carriage, of which there are various forms, accommodated to the different uses they are intended for.

WAGTAIL, in ornithology, the name of two different species of motacilla.

WAIF, or **WAFZ**, in law, a term applied to such goods as a thief having feloniously stolen, on his being closely pursued, are waifed or left by the felon, which become forfeited to the king, or lord of the manor: and so it is also where a felon has the goods in his custody, and apprehending that pursuit is made, he flies and leaves them behind him.

WAIF, is also applied to things lost, and estrays, which, no owner appearing, are forfeited to the lord of the manor, after they have been cried and published in the markets.

WAINSCOT, in building, the timber-work that serves to line the walls of a room, being usually made in pannels, and painted, to serve instead of hangings.

WAIVE, according to the different acceptations of the word, signifies to forsake; but in the law it is especially applied to a woman, who, for any crime for which a man may be outlawed, is termed waive.

WAKE of a *Ship*, is the smooth water astern when she is under sail: this shews the way she has gone in the sea, whereby the mariners judge what way she makes.

WAKE, is the eve feast of the dedication of churches, which is kept with feasting and rural diversions.

WALE KNOT, a round knot, or knob, made with three strands of a rope, so that it cannot slip, by which the tacks, top-sail sheets, and stoppers, are made fast, as also some other ropes.

* **WALES**, a principality of England, comprehending twelve counties, namely, Anglesea, Carnarvonshire, Denbighshire, Flintshire, Merionethshire, and Montgomeryshire, in North Wales; Brecknockshire, Cardiganshire, Carmarthenshire, Glamorganshire, Pembroke-shire, and Radnorshire, in South Wales. This country is in general mountainous, and yet its produce is sufficient for the maintenance of the inhabitants. It is the place where the ancient Britons fled, when this island was invaded by the vic-

W A L

torious Saxons, who are now called Welsh, and continue to preserve their own language. The western part is bounded by St. George's Channel and the Irish Sea, the south by the Bristol Channel, the north by the Irish Sea, and the east by the counties of Chester, Salop, Hereford, and Monmouth. It contains seven hundred and fifty-one parishes, fifty-eight market-towns, and above three hundred thousand people. The air is clear and sharp, but the cattle are small, and provisions in general good and cheap. Wales is particularly remarkable for goats, which naturally delight in hilly countries. They have several creeks and harbours for ships, but the most remarkable is Milford haven, where 1000 vessels may ride safely at a time. It is watered with many rivers, of which the principal are the Dee, Wye, Usk, Conway, Cluyd, and Twy.

WALK, in gardening, an ornamental and useful part of a garden, differing from an alley by being wider.

WALL, in architecture, the principal part of a building, as serving both to inclose it, and support the roof, floors, &c. See *Building*.

WALL, in gardening.—Of all materials for building walls for fruit-trees, brick is the best, it being not only the handsomest, but the warmest and kindest for the ripening of fruit, and affording the best conveniency for nailing, as smaller nails will serve in brick than will in stone walls, where the joints are larger; and if the walls are coped with free-stone, and stone pilasters or columns at proper distances, to separate the trees, and break off the force of the winds, they are very beautiful, and the most profitable walls of any others.

* **WALLER**, EDMUND, the son of Robert Waller, esq; was born at Colehill in Warwickshire, on the 14 of March 1605. His father dying when he was very young, his mother sent him to Eton school, whence he was removed to King's college in Cambridge. At the age of sixteen or seventeen he was chosen to the last parliament of king James I. and served as burgess for Agmondesham. In 1623 he composed a fine poem on prince Charles's danger of being cast away in the road at St. André, and in 1628 a poem on his majesty's receiving the news of the duke of Buckingham's death. These poems recommended him to the favour of the court, and rendered him dear to persons of the best taste. He became

became one of the famous club, of which the lord Falkland, Sir Francis Wainman, Mr. Chillingworth, Mr. Godolphin, and other persons of eminence were members. It is uncertain at what time our author was married, but it is supposed that his first wife Anne, the daughter of Edward Banks, esq; was dead before he fell in love with lady Dorothy Sidney, daughter to the earl of Leicester, whom he celebrates with the most pleasing delicacy under the name of Saccharissa. He was returned burgeis for Agmondesham in the parliament which met in April, 1640. in which he opposed the court, as he did likewise in the beginning of the long parliament. In the latter end of the year 1642, he was one of the commissioners appointed by the parliament to present their propositions for peace to his majesty at Oxford; and, in 1643, he was deeply engaged in the design for reducing the city of London and the Tower, to the service of his majesty, for which he was imprisoned, and fined 10,000 l. upon which he travelled into France, where he continued several years. But upon his return to England, he sided with those in power, and became particularly intimate with Oliver Cromwell, upon whom he wrote a panegyric in 1654, and, in 1658, a poem on his death, which has been greatly admired. However, at the restoration, he was treated with great civility by Charles II. who always made him one of the party in his diversions at the duke of Buckingham's, and other places, and gave him a grant of the provostship of Eton college. He wrote a panegyric upon his majesty's return, which, however, was thought to fall much short of that he had before written on Oliver Cromwell: the king one day asked him in raillery, "How is it Waller, that you wrote a better encomium on Cromwell than on me?"—"May it please your majesty," answered he, "we poets generally succeed best in fiction." He sat in several parliaments after the restoration, and continued in the full vigour of his genius to the end of his life. He died of a dropsy on the 1st of October 1687, and was interred in the church yard of Beaconsfield, where a monument is erected to his memory. Mr. Waller has been honoured as the great refiner of English poetry. He restored to numbers the delicacy they had lost, and joined to mellifluous cadence the charms of sense.

WALNUT-TREE, *Juglans*, in bota-

ny, a genus producing male and female flowers on the same tree: the male flowers are disposed in an oblong, cylindrical, imbricated amentum; the corolla of each flower is divided into six plane, equal, and elliptic parts, in the center of which is situated a number of very short filaments, topped with erect, acuminate antheræ; the female flowers grow in small clusters, sitting close to the branches; the corolla of each is divided into four erect pointed segments; the fruit is a large, oval, dry, and unilocular drupe, inclosing a large oval nut with netted furrows, containing a kernel with four lobes, which are variously furrowed. This tree was formerly held in great esteem in this country, for its wood, which is, in fact, often very finely veined; but, on account of its aptness to be worm-eaten, it has of late given place to the beautiful and much sounder mahogany, with which our cabinet-makers have been pretty plentifully supplied from the British settlements in the West Indies. As an useful fruit-tree, independent of its timber, which is, however, still of good value, it merits the husbandman's attention; nor can the gentleman easily find a more stately one to adorn his park with, or to form a noble avenue to his mansion.

* WALPOLE, Sir ROBERT, afterwards earl of Orford, was born at Houghton, in Norfolk, the 5th of December, 1674, and educated at Eton school, and King's college in Cambridge; but succeeding to the family estate, he resigned his fellowship, and in the year 1700 was elected member of parliament for King's Lynn; which borough he represented in several succeeding parliaments. Five years after he was nominated one of the council to prince George of Denmark, lord high admiral of England; in 1707 was made secretary at war; and, in 1709, treasurer of the navy; but, on the change of the ministry the following year, he was removed from all his posts; and in 1711, was voted by the house of commons guilty of a high breach of trust, and of notorious corruption in his office of secretary at war, was expelled the house of commons, and committed to the Tower. All the Whigs considered Mr. Walpole as a kind of martyr in their cause. The borough of Lynn re-elected him; and, though the house declared the election void, persisted in their choice. In the next parliament he distinguished himself in behalf of liberty, by vindicating

Mr.

Mr. Steele in the debate relating to his publishing the *Orisus*, and soon after he exerted his eloquence in defence of civil and religious liberty, by his opposition to the schism bill. As, on the death of the queen, a revolution of politics took place, and the Whig party prevailed, in a few days after the arrival of king George I. he was appointed receiver and paymaster-general of all the guards, garrisons, and land forces in Great Britain, paymaster of the royal hospital of Chelsea, and a privy counsellor. He was soon after chairman of the committee of secrecy; was chosen to enquire into the conduct of the late ministry in concluding the peace with France; and the vigour he exerted upon this occasion was soon rewarded by the extraordinary promotions of first commissioner of the treasury, chancellor and under treasurer of the exchequer. Two years after it appeared that the interest of Mr. Secretary Stanhope began to outweigh that of Mr. Walpole, whose power was visibly on the decline. Mr. Walpole resigned all his places to the king, and the same day brought in the famous sinking fund bill, which he presented as a country gentleman. In the next parliament he opposed the ministry in every thing; and upon a motion in the house for continuing the army, he made a speech of above an hour long, and displayed all his eloquence in shewing the danger of a standing army in a free country. Early in the year 1720 the rigour of the patriot seemed to soften, and he was again appointed paymaster of the forces, and it was not long before he acquired full ministerial power, by being appointed first lord commissioner of the treasury, and chancellor of the exchequer. When the king went abroad, in 1713, he was nominated one of the lords justices for the administration of government, and was sworn sole secretary of state during the absence of the lords Townshend and Carteret. About this time he received another mark of the royal favour, his eldest son, then on his travels, being created a peer, by the title of baron Walpole of Walpole. In 1725 Sir Robert shewed that he was not unambitious of honour by his being created knight of the Bath, and the following year he was installed knight of the most noble order of the Garter. We cannot give the measures of his administration. During the long time he remained prime minister. It is sufficient to say, that his

endeavouring to obtain an act for a general excise, and several other of his measures, were, in the highest degree unpopular; but with respect to most of his proceedings, it is difficult to discern the truth, through the exaggerations and misrepresentations of party. He has been called the father of corruption; and though he is said to have boasted that he knew every man's price, yet in the year 1742, the opposition prevailed, and he being no longer able to carry a majority in the house of commons, he resigned all his places, and was soon after created earl of Orford, when the king granted him a pension of 4000 l. a-year, in consideration of his long and faithful services. The remainder of his life he spent in a tranquil retirement, and died in 1745, in the seventy-first year of his age.

WAPENTAKE, (from the Saxon) the same with what we call a hundred, more particularly in the northern counties beyond the river Trent. There have been several conjectures as to the original of the word; one of which is, that anciently musters were made of the armour and weapons of the inhabitants of every hundred; and from those that could not find sufficient pledges of their good abearing, their weapons were taken away, and given to others; whence it is said this word is derived.

WAR, a contest or difference between princes, states, or large bodies of people, which not being determined by the ordinary measures of equity and justice, is referred to the decision of the sword.

Holy WAR, was that anciently maintained by leagues and croisades, for the recovery of the Holy Land.

WARD, in law-books, a word of divers significations: thus, a ward in London, is a part of the city committed to the special charge of one of the aldermen of the city. There are twenty-six wards in London, which are as hundreds, and the parishes thereof as towns. A forest is also divided into wards, and so are most of our hospitals.

WARDEN, or **GUARDIAN**, one who has the charge or keeping of any person, or thing, by office.

Such is the warden of the Fleet, the keeper of the Fleet prison, who has the charge of the prisoners there, especially such as are committed from the court of chancery for contempt.

Warden, in an university, is the head of a college; answering to what in other colleges

WAR

colleges we call the master thereof. Warden, or lord warden of the Cinque Ports, is the governor of these noted havens, who has the authority of an admiral, and sends out writs in his own name. Warden of the mint, is an officer whose business it is to receive the gold and silver bullion brought in by the merchants, to pay them for it, and oversee the other officers. He is called keeper of the exchange and mint.

WARDROBE, a closet, or little room adjoining to a bed-chamber, serving to dispose and keep a person's apparel in; or for a servant to lodge in, to be at hand to wait, &c.

Wardrobe, in a prince's court, is an apartment wherein his robes, wearing apparel, and other necessities are preserved under the care and direction of proper officers, as the master of the wardrobe, clerk, &c. of the wardrobe.

WARNING-PIECE, in the military art, is the gun which is fired every night about sun-set, to give notice to the drums and trumpets of the army to beat and sound a retreat or tattoo, which is likewise setting the watch.

WARNING-WHEEL, in a clock, is the third or fourth, according to its distance from the first wheel.

WARP, in the manufactures, is the threads, whether of silk, wool, linen, hemp, &c. that are extended lengthwise on the weaver's loom; and across which the workman, by means of his shuttle, passes the threads of the woof, to form a cloth, ribbon, fustian, or other matter.

To **WARP a Ship**, is to shift her from one place to another, when the wind and tide will permit it without danger.

WARRANT, an act, instrument, or obligation, whereby a person authorises another to do something which he otherwise had not a right to do.

Warrant of attorney, is that whereby a man appoints another to do something in his name, and warrants his action.

WARRANTY, a promise or covenant by deed, made by the bargainer for himself and his heirs, to warrant and secure the bargainee and his heirs against all men for enjoying the thing agreed on between them.

WARREN, a franchise, or place privileged either by prescription or grant from the king, to keep beasts and fowl of warren in; as rabbits, hares, partridges, pheasants, &c.

By statute 21 Edw. III. a warren may

WAR

lie open, and there is no need of closing it in, as there is a park.

WARREN, Sir **PETER**, an admiral, distinguished by his virtue, learning, and valour, was descended from an ancient family in Ireland, and obtained a command in the royal navy, in which he served several years with great reputation; but the transaction which placed his great abilities in their full light, was the taking of Louisbourg, in 1745, when he was appointed commodore of the British Squadron sent on that service. He joined the fleet of transports from Boston in Casco-bay, the 25th of April, having under his command the *Superb* of sixty, and the *Launceston* and *Eltham* of forty guns: he was afterwards joined by several other men of war from England, and took possession of Louisbourg the 4th of June. The French, exasperated at this loss, were constantly on the watch to retake it; and in 1747 fitted out a large fleet for that purpose, and at the same time another squadron to prosecute their success in the East Indies. These squadrons sailed at the same time. But these views of the French were rendered abortive by the gallant admiral Anson, and Mr. Warren, who had been created rear-admiral, who, with a large fleet of ships, fell in with the French, defeated the whole fleet, and took the greatest part of the men of war. Thus the conqueror of Cape Breton became its protector. For this gallant action admiral Anson was created a peer of Great Britain, and rear-admiral Warren invested with the order of the Bath. A peace being concluded in the succeeding year, the fleet was laid up in the several harbours. He was then chosen one of the representatives in parliament for Westminster; and in the midst of his popularity he paid a visit to Ireland, his native country, where he died of an inflammatory fever, the 29th of July 1752. An elegant monument of white marble was erected to his memory in Westminster abbey.

WART, in surgery, a little round hard excrescence arising from the flesh like a pea. A wart begins at the cutis, and seems to be either an efflorescence of the serum of the blood, which hardening in the surface of the skin, makes a dry tumour; or else some small luxuriancy of the little arteries of the cutis, which thrust themselves out, making a pretty sarcoma, which we call a soft wart.

According

According to the variety of the tumour, it is sometimes whole with a smooth surface, and sometimes chapped and uneven.

The method of cure which deserves to be first mentioned, is by ligature or vincure; this is performed upon such of these excrescences as are slender about the roots, and in a manner pendent, by firmly tying about them a horse-hair, or a silken or linen thread; the warts, being thus deprived of the juices which nourish them, through a constriction of the vessels by the ligature, gradually wither and fall away.

Another method of cure is the surgeon's instrument, with which the wart is taken up by a hook or forceps, and then very nicely separated by the scissars. The wound is treated for some time with an application of the lapis infernalis, or some other corroding medicine, that if any part of a root should remain, from which a new tubercle might arise, it might be consumed and destroyed.

The cure by caustics is best performed by cutting off the hard upper part of the wart, with a razor or scissars, and then surrounding its bottom with a circle of wax to prevent the spreading of the remedies; to touch it daily with oil of tartar, spirit of salt, aqua fortis, or butter of antimony.

The cure by cautery is performed by choosing a cautery of a proper size, and with that burning down to the root of the wart. This is the most painful of all the methods of extirpating these excrescences; but the pain is but for a moment, and the warts extirpated this way never return.

The cure by evulsion is performed by anointing them with softening ointment, and then seizing them artfully between the thumb and fore-finger, and forcibly wrenching them out. This is a mountebank method, and a bad one; for it is not only very painful, but the warts commonly grow up again.

When warts are found to look livid and blue, it is best to let them alone entirely; because, when irritated, they frequently degenerate into a cancer. See *Cancer*.

WARWICK, the capital town of Warwickshire, with a market on Saturdays, and four fairs, May 12, July 5, and November 8. for horses, cows, and sheep, and September 4, for horses, cows, sheep, and cheese. It is seated on a rock, near the river Avon, and all the passages

to it are cut through the rock, and there is no way to go to this place but over a water. It was fortified with a wall, which is now in ruins; but it has still a strong castle, which is the seat of lord Brooke. It is a large corporation, and contains two parishes. The houses are well built, and the town principally consists of one regular built street; and the assizes and general quarter-sessions are held here. It is adorned with a good free-school and a market-house. It has also a noted hospital, called St. James's, for twelve decayed gentlemen, who have each 20 l. a-year, and the chaplain 50 l. It is well inhabited, enjoys a good trade, and sends two members to parliament. It is 18 miles S. W. of Coventry, and 93 N. W. of London.

WARWICKSHIRE, a county of England, 47 miles in length, and 27 in breadth, bounded on the W. by Worcestershire, on the S. by Oxford and Gloucestershires, on the E. by Northampton and Leicestershires, and on the N. by Staffordshire. It contains 168 parishes, 17 market-towns, and sends six members to parliament; two for Warwick, two for Coventry, and two for the county. The air is mild and healthful, and the soil fertile, particularly in the S. part, called the Vale of the Red Horse. It has iron mines. Warwick is the shire town.

WASH, among distillers, the fermentable liquor used by the malt-distillers.

WASHING, in painting, is when a design, drawn with a pen or crayon, has some one colour laid over it with a pencil, as Indian ink, bistre, or the like, to make it appear the more natural, by adding the shadow of prominences, apertures, &c. and by imitating the particular matters, of which the thing is supposed to consist. Thus, they wash with a pale red to imitate brick and tile; with a pale Indian blue, to imitate water and slate; with green, for trees and meadows; with saffron or French berries, for gold or brass; and with several colours for marbles. These washes are usually given in equal tints or degrees throughout, which are afterwards brought down and fostered over the lights with fair water, and strengthened with deeper colours for the shadows.

WASHING, or **WASHES**, among goldsmiths, coiners, &c. are the lotions whereby they recover the particles of gold and silver out of the sweep, that is, ashes,

ashes, earths, sweepings, &c. This is either performed by simply washing them again and again, or by putting them in the washing-mill.

WASP, in zoology, an insect with four wings and six feet; its body is yellow, with black triangular spots. The common wasp breeds in the ground. There is another kind much more fierce, but very rare: these breed in woods and mountains; they are larger, and have broader bodies, and much more black about them; their sting is so large, that it seems disproportioned to the size of their bodies.

WASP-FLY, in natural history, a species of fly, having very much the external figure of a wasp, but harmless, without a sting, and with only two wings.

WAST, or **WASTE**, in law, has divers significations. It is used for a spoil, made either in houses, woods, lands, &c. by the tenants for life, or for years, to the prejudice of the heir, or of him in reversion or remainder. Upon this the writ of waste is brought for the recovery of the thing wasted, and treble damages.

WASTE is also taken for those lands which are not in any man's occupation, but lie common.

They seem to be so called, because the lord cannot make such profit of them as of his other lands, by reason of the use others have thereof, for passing to and fro. Upon this none may build, cut down trees, &c. without the lord's licence.

WASTE-BOARDS, boards sometimes set upon the side of a boat, or other vessel, to keep the sea from breaking into her.

WATCH, in the art of war, a number of men posted at any passage, or a company of the guards who go on the patrol. Watch also implies a person posted as a spy in any place, to have an eye thereto, and to give notice of what passes. A watch is properly intended for the apprehending of rogues in the night, as ward is for the like purpose in the day-time; and for default to watch and ward the township, &c. is punishable.

WATCH is also used for a small portable movement or machine for the measuring of time; having its motion regulated by a spiral spring.

Watches, strictly taken, are all such movements as shew the parts of time;

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as clocks are such as publish it, by striking on a bell, &c. But, commonly, the name watch is appropriated to such as are carried in the pocket; and clock, to the large movements, whether they strike or not. See *Clock*.

Striking WATCH, one which, besides the common watch-work for measuring time, has a clock part for striking the hours; so that, properly speaking, they are pocket clocks.

Repeating WATCH, one that by only pulling a string, pushing in a pin, &c. repeats the hour, quarter, or minute, at any time of the day or night.

WATCHING, or **WAKEFULNESS**, *Insomnia*, in medicine, is produced by too great a determination of the nervous fluid to the organs of the senses, whereby these organs are prepared to receive, readily, any impression from external objects, which they propagate to the brain, and furnish the soul with divers occasions of thinking. This extraordinary flux of spirits may have two causes; for, 1. The sensible objects may strike the organ with too much force; in which case, the animal spirits being violently agitated, and those agitations continued by the nerves to the brain, they give a like motion to the brain itself; the necessary consequence of which is, that the animal must wake. Thus, a loud shriek, pains, headach, gripes, coughing, &c. cause waking. And the soul's being oppressed with cares, or deeply engaged in thinking, contributes to the same, since, as it acts by the ministry of the spirits, any cares or meditations that keep them in motion must produce watchfulness. Of this kind are those inveterate wakings of melancholic persons, some of whom have been known to pass three or four weeks without a wink of sleep.

2. The other cause is in the spirits themselves, which have some extraordinary disposition to receive motion, or to persist in it; as from their too great heat, or that of the brain, in fevers, &c. Hence it is, that the disorder is most frequent in summer, in the heat of youth, &c.

Long fasting has the same effect; the want of food subtilizing the spirits, and drying the brain. The same is likewise an ordinary symptom in old age, on account of the pores of the brain and nerves having been much widened by the continual passage of spirits for a great number of years, the spirits now pass and repass
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through them with too much ease, and need not any extraordinary motion to keep the mind awake. There are instances of waking forty-five nights successively; and we even read of a melancholy person, who never slept once in fourteen months. Such watchings usually degenerate into madness.

WATER, in general, implies a pellucid fluid, convertible into ice by cold; naturally pervading the strata of the earth, and flowing or stagnating on its surface.

Pure water would require a definition very different from this, that of a limpid and colourless liquor, without smell or taste, simple and volatile. But such a definition would not include the waters impregnated with metalline, stony, saline, and other fossile particles.

Waters may be arranged under two general divisions:

1. The common waters, serving for the ordinary purposes of life.

2. The waters impregnated with peculiar mineral substances. The differences of common water, arising from the circumstances of stagnation or motion, or of its containing more or less of those stony particles, which it always contains in some degree, are not so essential, as to prevent the whole from being considered as of only one kind.

The waters impregnated with peculiar mineral substances, on the other hand, differ essentially, in regard to the several impregnating matters, and are properly arranged, according to them, into four kinds:

1. Waters impregnated with metalline particles.

2. Waters impregnated with saline particles.

3. Waters impregnated with sulphureous particles.

4. Waters impregnated with terrene particles.

The waters of the first general kind are used in the common occasions of life, those of the other are taken as medicines to restore decayed health.

Simple water, to use the received phrase, is a pellucid colourless fluid, insipid to the taste, and without smell: we meet with this under different circumstances, and accordingly divide it into spring-water, well-water, river-water, pond-water, rain-water, and snow-water. The first is the water furnished us from the bowels of the earth, and is continually fresh supplied: the second is the same

water, only with the difference of its remaining long in the same place before we have it: the third is a mixture of the first, and of fresh vapours raised from the sea and fresh waters, and descending in rains. The two first are almost invariably the same; the latter is subject to a thousand changes, from the matters accidentally washed into it by the torrents occasioned by the rains; but it has the advantage of being in continual motion. The fourth is much the same in its nature with this, but is rather more owing to water that has been raised in vapour, and has fallen again in rain; this has also the disadvantage of standing and stagnating in its place. The fifth has the advantage of being wholly raised in vapour, and, as it were, distilled by nature: it is, consequently, purer than any of the others; but there are so many kinds of particles capable of rising with the water in vapour, that it never can be, nor ever is perfectly pure. The last has all the advantage of this, and the additional one, of having been frozen in its passage, and thus having passed through an operation very well calculated for the separating of heterogeneities of many kinds. Upon the whole, the last, or snow-water, bids fair for being the purest and fittest for our common use, of any that comes in our way; yet even this we have found, by experiments, not to be absolutely pure.

Medicinal Waters, are such as, beside the sparry, earthy, and crystalline matter contained in all water, are impregnated with other mineral particles, and these either of the metalline or saline kind. These waters are distinguished by two general kinds, as they come forth out of the ground, either hot or cold. The names by which they are called are *thermae* and *acidulae*. The name of *thermae* is properly enough given to the hot ones, expressing as much; but the other term, *acidulae*, is not quite apposite to the cold ones, because they rarely contain an acid salt, but always an alkaline one. It was given them on account of a certain urinous, or, as some express it, a subacid taste, which many of the cold mineral waters have, when fresh drawn from the spring.

Sea-water, because of this disagreeable taste, is rarely given internally, though when people can be prevailed with to take it, great advantages are to be expected from it. It is of great use, however, in bathing; cutaneous eruptions of almost

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almost all kinds are cured by a constant use of it this way for some time; tumors and pains of the limbs are also often cured by it, and we find it continually recommended as the great medicine against the most terrible of all diseases, the bite of a mad dog. It is a common error to suppose that water with salt dissolved in it is the same thing with sea-water. It is said, indeed, that it has answered in the external way, by way of bath, in some cases; but those people have been miserably deceived who thought, from the internal use of salt water some time since brought up among us, that they supplied its place in a pleasanter manner by drinking common water with some sea-salt dissolved in it.

WATER ORDEAL, or TRIAL, among our ancestors, was of two kinds, by hot and by cold water. Trial or purgation by boiling or hot water was a method of proving crimes, by immersing the body, or the arm, in hot water, with divers religious ceremonies. In the judgement by boiling water, the accused, or he who personated the accused, was obliged to put his naked arm into a caldron full of boiling water, and to draw out a stone thence placed at a greater or less depth, according to the quality of the crime. This done, the arm was wrapped up, and the judge having set his seal on the cloth, at the end of three days they returned to view it, when, if it was found without any scald, the accused was declared innocent.

The nobles, or great personages, purged themselves thus, by hot water, and the populace by cold water.

The trial, or purgation by cold water, was thus: after certain prayers and other ceremonies, the accused was swaddled, or tied up, all in a pelatoon, or lump, and thus cast into a river, lake, or vessel of cold water, where if he sunk he was held criminal, if he floated, innocent.

WATER, among jewellers, is properly the colour or lustre of diamonds and pearls. The term, though less properly, is sometimes used for the hue or colour of other stones.

WATER-BAILIFF, an officer in seaport towns, appointed for the searching of ships; and in London, the water-bailiff hath the supervising and search of fish brought thither, and the gathering of the toll arising from the Thames: his office is likewise to arrest men for debt, &c. or other personal or criminal matters upon the river Thames.

WATER-COLOURS, in painting, such colours as are only diluted and mixed up with gum-water, in contradistinction to oil colours.

The use of water-colours makes what we call limning, as that of oil-colours does painting, properly so called.

Dead WATER, in the sea language, the eddy-water that follows the stern of a ship, not passing away so fast as that which slides by her sides.

WATER-GANG, a channel cut to drain a place by carrying off a stream of water.

WATER-LINE of a Ship, a line which distinguishes that part of her under water from that above, when she is duly laden.

WATER-MEASURE. Salt, sea-coal, &c. while aboard vessels in the pool or river, are measured with the corn-bushel heaped up, or else five stricked pecks are allowed to the bushel. This is called water-measure.

WATERMEN, such as row in boats, or ply on the river Thames, in the government of whom the lord mayor of London, and court of aldermen there, had always great power. They still have the appointing of their fares, the taking more than which makes them liable to a fine of forty shillings and half a year's imprisonment.

Watermen's boats ought to be twelve feet and a half in length, and four and a half in breadth; and no apprentice to any waterman shall rake upon him the care of a boat till he is sixteen years of age, if a waterman's son, and seventeen, if a landman's son, unless he has worked with some able waterman two years, &c.

No tilt-boat, or row-barge, &c. may take in above thirty-seven passengers, or three more by the way; nor any boat above eight passengers, and two by the way, else they forfeit 5 l. for the first offence, and 10 l. for the second, &c. and if any person be drowned when a greater number are taken in, the waterman is declared guilty of felony, and may be transported, &c.

WATER-MILL, a machine for grinding corn, &c. driven by the water.

In water-mills, the momentum of the falling water is the power, the force to be overcome is the great attrition of the two stones in grinding the corn, &c. which is effected wholly by a complication of wheels and axles. A query may be here put, Why, since the power constantly acts upon the wheel, the motion

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of the wheel should be equable, and not accelerated? The answer is. The increments of velocity keep rising, till their momentum is equalled by the resistance of the machine; after which equilibrium, the wheel goes on with one uniform motion.

WATER-SHOOT, is a young spring which springs out of the root or stock of a tree.

WATER-TABLE in architecture, a sort of ledge, set in stone or brick walls, about eighteen or twenty inches from the ground, from which place the thickness of the wall begins to abate.

WATER-WAY, in a ship, a small ledge of timber, lying fore and aft on the deck, close by her sides, to keep the water from running down there.

WATER-WHEEL, an engine for raising water in great quantity out of a deep well.

WATER-WORKS, in general, denote all manner of machines moved by, or employed in raising or sustaining water; in which sense, water-mills of all kinds, sluices, aqueducts, &c. may be called water-works. The term water-works, however, is more particularly used for such machines as are employed only in raising water.

WATERING, in the manufactures, is to give a lustre to stuffs, &c. by wetting them lightly with gum-water, and then passing them through the press or calender, whether hot or cold.

The gum-water ought to be pure, thin, and clear, otherwise the folds of the stuff will stick together: the operation must also be performed when the water is very hot, that it may penetrate.

WATTS, Dr. ISAAC, was born at Southampton, the 17th of July, 1674, of parents who were eminent for religion, and were great sufferers by the persecution of the dissenters in the reign of Charles II. He began to learn Latin at four years of age, in the knowledge of which, as well as of the Greek language, he made a rapid progress; and in 1690 was sent up to London for an academical education, under the tuition of the reverend Mr. Thomas Rowe. When he had finished his studies there, he returned to his father's house, where he spent two years more; and, in 1694, was invited by Sir John Hartopp, Bart. to reside in his family at Stoke Newington, as tutor to his son, where he continued four years. In 1698, he was chosen assistant to Dr. Isaac Chaney, at the meeting-house

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near Duke's Place; and, in 1701, succeeded that gentleman in the pastoral office, when his ill state of health induced his congregation to choose him an assistant. About the year 1712, the doctor falling into a weak state of health, was taken into the family of Sir Thomas Abney, Knt. where, to the day of his death, he was abundantly supplied with whatever could administer to the convenience and satisfaction of life, but continued to preach to his congregation, and during that time constantly devoted a fifth part of his income to charitable uses. In 1728, the universities of Edinburgh and Aberdeen, in Scotland, without his knowledge, conferred on him the degree of doctor of divinity. His numerous works have rendered his name famous among people of every denomination. His Lyric Poems, his Psalms and Hymns, and his Divine Songs for Children, are a sufficient proof of his poetical talents. His Logic and Philosophy have been much admired. He also wrote works upon a variety of other subjects, and printed several volumes of his sermons. He was admired for the mildness and benevolence of his disposition, and the sweetness of his manners. He died the 25th of November, 1748, in the 75th year of his age.

WAVE, *Unda*, in philosophy, a cavity in the surface of water, or other fluid, with an elevation aside thereof.

WAVE-OFFERING, in Jewish antiquity, a sacrifice offered by agitation, or waving, towards the four cardinal points of the compass.

WAVED, **WAVY**, or **WAVEY**, in heraldry, is said of a bordure, or any ordinary, or charge, in a coat of arms, having its out lines indented in manner of the rising and falling of waves: it is used to denote, that the first of the family in whose arms it stands, acquired its honours for sea-service.

WAVING, in the sea language, the making signs to a vessel to come near or keep off.

WAX, or *Bee-Wax*, is one of the products of the bee-hive, which, though it is, as well as the honey, of a vegetable origin, yet, as we have no way of procuring it, but by means of the bees that have stored it up for us, is to be reckoned, in the same manner as the honey, among the number of drugs which we receive from the animal kingdom.

Wax is a firm and solid substance, moderately hard, and of a fine yellow colour;

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colour; it melts with a gentle heat, and is inflammable; it is soluble in oil, but not in aqueous or spiritous menstrooms; it is almost insipid to the taste, but of a fragrant and agreeable smell; and, in its original state, is the matter which composes the honey-comb. It is prepared in the cakes we see it in, merely by melting and straining it through a cloth, which separates the dross and foulness, and lets the clear wax through. It may be further purified by melting again, and scumming it while in fusion, and repeating the straining: by this means it will become of a good consistence, and high colour: it is to be chosen of a strong yellow colour, and fragrant smell, and such as breaks tolerably easy, and on chewing in the mouth does not stick to the teeth.

The true origin of wax is this; the flowers of plants have, for one of their principal and essential parts, certain filaments, or threads, called by the botanical writers, stamina, rising usually from the base or center; these are different in number from one to a vast abundance in each flower: these sustain at their tops certain little bodies, usually of a round, but sometimes of other figures, called by the same authors apices, or antheræ, and containing a fine dusty matter, or variously coloured powder. These stamina and apices were long esteemed of very little use to the plant, mere ornaments, or receptacles of an abundant juice sent up to the flower; but of late, botany has received too many improvements to be left chargeable with so gross an error: these are discovered to be essential to the great end, the propagating the species of the plant; they are, indeed, the male plants, serving to impregnate the young seeds in the pistil, and the impregnating matter is found to be dust or powder in these apices; this is called, therefore, the farina fecundans of plants; and however little this may have been suspected to have to do with our subject, it is, indeed, the very thing of which the bees form their combs, or, in other words, the farina of plants is wax not yet reduced to form by the bees. These little creatures seek no farther for the materials of their combs than to the apices of flowers; these, if of a more solid and firm texture, they are at the pains of opening with their teeth; or, if less tough, or already opening, they rob of their farina, by rubbing their bodies among them, and so dislodging the dust, which adheres to their bodies by means

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of the hairs they are covered with, and is thence collected into a mass.

From the common yellow wax, by the mere effect of sun and air, or by what is called bleaching, is formed what we term white wax, and some, very improperly, virgin wax. As the greater the surface is in proportion to the quantity, the sooner and more perfectly this operation is performed. The usual way is to melt the wax in hot water; when melted, they press it through a strainer of tolerable fine linen, and pour it into round and very shallow moulds. When hardened by cooling, it is taken out and exposed to the sun and air, sprinkling it now and then with water, and often turning it: by this means it soon becomes white. The best sort is of a clear and almost transparent whiteness, dry, hard, brittle, and of an agreeable smell, like that of the yellow wax, but much weaker.

The common yellow wax is of very great use both in medicine and in many of the arts and manufactures. It is sometimes given internally, as in dysenteries, and other erosions of the intestines; but its great use is in the making ointments and plasters for external use, and the greater part of those of the shops owe their consistence to it. The white wax is also an ingredient in some of the cerates and ointments of the shops; and is used in making candles, and in many of the nicer arts and manufactures, where wax is required.

Grafting WAX, a composition serving to bind the graft to the cleft of the stock. For the manner of making which, see *Methods of GRAFTING*.

To imitate fruit in WAX. Take the fruit and bury it half way in clay; oil its edges, and that part of the fruit which is uncovered; then nimbly throw on it tempered alabaster or plaster of Paris, to a considerable thickness. When this is grown dry and hard, it makes the half mould; the second half of which may be obtained in the same manner. The two parts of the mould being joined together, a little bees wax melted and brought to a due heat, being poured through a hole made in a convenient part of the mould, and presently shook therein, will represent the original fruit.

WAX-WORK, the representation of the faces, &c. of persons living or dead, made by applying plaster of Paris in a kind of paste, and thus forming a mould containing the exact representation of the features.

Figures. Into this mould melted wax is poured, and thus a kind of masks are formed; which being painted and set with glass eyes, and the figures dressed in their proper habits, they bear such a resemblance that it is difficult to distinguish between the copy and the original.

WAXING, in chemistry, the preparation of any matter to render it fit and disposed to liquify, or melt, which of itself it was not. This is frequently done to enable things to penetrate into metals and other solid bodies.

WAY, a passage or road. See *Road*.

The Roman ways are divided into consular, prætorian, military, and public; and of these we have four remarkable ones in England; the first, Watling-street, or Watling-street, leading from Dover to London, Dunstable, Towcester, Atterston, and the Severn, extending as far as Anglesea in Wales. The second, called Hikenild, or Ikenild-street, stretches from Southampton over the river Isis at Newbridge; thence by Camden and Lichfield; then passes the Derwent, near Derby, and ends at Tine-mouth. The third, called Fosse-way, because in some places it has never been perfected, but lies as a large ditch, leads from Cornwall, through Devonshire, by Tethbury, near Stow in the Wolds; and beside Coventry to Leicester, Newark, and so to Lincoln. The fourth, called Erming, or Erminage-street, extends from St. David's in Wales, to Southampton.

WAY of a Ship, sometimes the same as her rake, or run forward and backward; but this term is most commonly understood for her sailing. Thus, when she goes apace, it is said that she hath a good way, or makes a fresh way. So when an account is kept how fast she sails by the log, it is called keeping an account of her way; and because most ships are apt to fall a little to leeward of their true course, they always in casting up the log-board allow something for her leeward way.

WAY of the Rounds, in fortification, a space left for the passage of the rounds between the rampart and the wall of a fortified town. This is not now much in use, because the parapet, not being above a foot thick, is soon overthrown by the enemy's cannon.

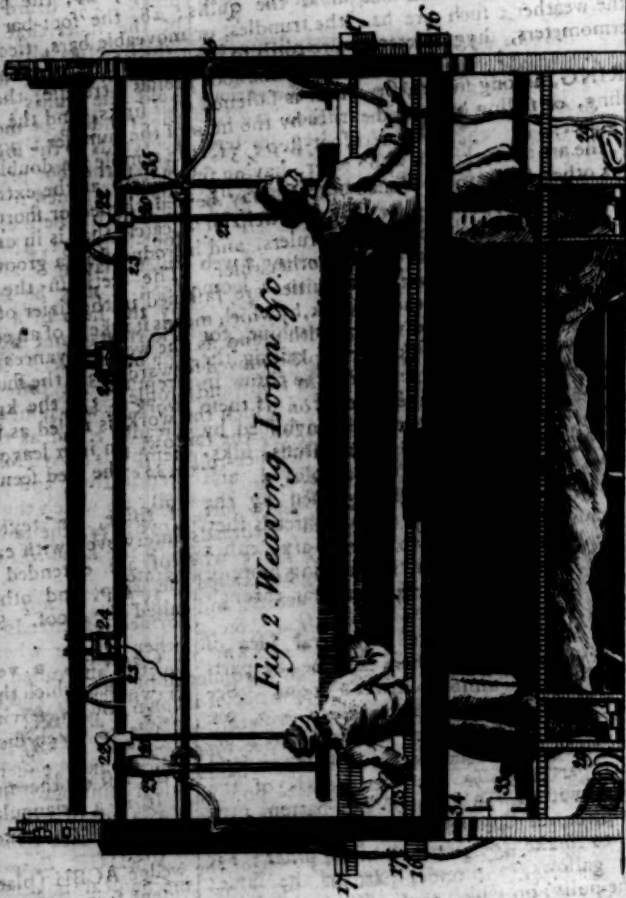
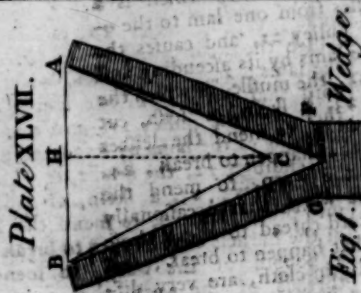
WAY-WODE, a title given to the governors of the chief places in the empire of Muscovy, as also in Poland.

WEAR, or **WEER**, a great flank or

dam in a river, fitted for the taking of fish, or for conveying the stream to a mill. New wears are not to be made, or others altered, to the nuisance of the public, under a certain penalty.

WEASEL, in zoology, a species of mustela, with the tip of the tail black. This is a smaller animal than the polecat; the head is small, of an ovated form, and sharp at the snout; the ears are small, short, and patulous; the eyes of a fierce aspect; the mouth well furnished with teeth; the upper jaw longer than the under; the body is about eight inches long, and slender; the tail is a third part the length of the body; the legs are short and slender; the feet have five toes armed with sharp claws; the whole body is covered with a fine and tolerably long fur: the back is of a darkish colour, and the belly is white.

WEATHER, the state or disposition of the atmosphere, with regard to heat, cold, wind, rain, frost, &c. As it is in the atmosphere that all plants and animals live and breathe, and as that appears to be the great principle of most animal and vegetable productions, alterations, &c. there does not seem any thing in all philosophy of more immediate concernment to us than the state of the weather, and a knowledge of the great influence it has on our bodies, and the sensible alterations we undergo thereby. In effect, all living things are only assemblages or bundles of vessels, whose juices are kept moving by the pressure of the atmosphere; and which, by that motion, maintain life: so that any alteration in the rarity or density, the heat, purity, &c. of that, must necessarily be attended with proportionable ones in these. What vast, yet regular alterations a little turn of weather makes in a tube filled with mercury, or spirit of wine, or in a piece of string, &c. every body knows, in the common instance of barometers, thermometers, &c. and it is owing partly to our inattentions, and partly to our unequal, intemperate course of living, that we do not feel as great and regular ones in the tubes, chords, and fibres of our own bodies. It is certain, a great part of the brute creation have a sensibility and sagacity, this way, beyond mankind, and yet, without natural means, or disposition thereto, more than we, except that their vessels, fibres, &c. being in other respects in one equal habitude, the same cause from without has always a like effect on them;



them; that is, their vessels are regular barometers, &c. affected only from one external principle, the disposition of the atmosphere; whereas ours are acted on by divers from within, as well as without, some of which check, impede, and prevent the action of others.

WEATHER-COCK, or WEATHER-VANE, a moveable vane in the form of a cock, or other shape, placed on high, to be turned round according to the direction of the wind, and point out what quarter the wind blows from. See *Wind*.

WEATHER-GLASSES, instruments contrived to indicate the state or disposition of the atmosphere, and the various alterations in the weather; such are barometers, thermometers, hygrometers, &c.

WEATHERING, among sailors, signifies the doubling, or sailing by a headland, or other place.

WEAVING, the art of working a web of cloth, silk, or other stuff, in a loom with a shuttle.

WEAVING-LOOM, a machine for weaving cloth, silk, &c. by raising the threads of the warp in order to throw in the shoot, and strike it close. Of these there are various kinds, distinguished by the different sorts of cloths, stuffs, silks, &c. in which they are employed, and which are chiefly distinguished by the number and variety of the threads they raise in order to work the warp, either plain or in figures, by making more or less of the woof or shoot appear through the warp.

In order to give a general idea of weaving, we shall here describe the parts of the common weaver's loom. See plate XLVII. fig. 2. in which 9, 9, are the loom-posts; 10, the cross-bars; 11, the batten, which serves to strike in, and close more or less the threads of the woof; 12, the cap of the batten, or a long bar, which the weaver takes hold of in one hand, and then in the other; 13, the block, or under part of the same, containing the reed within the lower bar; 14, the cross-piece, or burdon and pin, which helps to make the batten moveable; 15, the gallows, a piece of wood suspending the pully, on which the cord moves that is tied to the two lams; 16, the breast-bar, a flat square piece of wood, with an opening in it, to let the stuff through, which is rolled on the knee-roll; 17, the cane-roll, which the warp is turned on at the other end of the

loom; 18, the reed; 19, pulleys upon which the cords roll that are fastened to the lams; 20, the tumbler, which is a cord that passes from one lam to the other over the pulley 21, and causes the working of the lams by its ascending and descending; 22, the muffle, in which the pulley acts; 23, a skein, or leish, cut into proper lengths, to mend the leishes of the harness that happen to break; 24, a bobbin of the warp, to mend the threads of the warp that occasionally break; 25, lizard thread to mend those of the lizier that happen to break; and which, especially in cloth, are very different from the warp; 26, the box to hold the quills; 28, the foot-bar; 29, the trundles, or moveable bars, tied with two cords to the lower virgee of each lam. When the foot presses a treddle, the lam that is fastened to it sinks, and the other rises by the help of the tumbler; 30, the foot-step; 31, the temple; a double flat ruler, having small teeth at the extremities; it may be lengthened or shortened by the help of a catch that is in one of the rulers, and introduced in a groove in the other ruler. The teeth in the extremities are fastened in the lizier of the work, by which means it is kept of an equal breadth; and as the work advances the temple is moved forwards; 32, the shuttle seen in front and profile; 33, the knee-roll, on which the work is rolled as it is wove; 34, the tantow, an iron lever to turn the knee-roll; 35, the reed seen separate.

WEB, a sort of tissue, or texture formed of threads interwoven with each other; some whereof are extended in length, and called the warp, and others drawn across, and called the woof. See *Cloth, Warp, &c.*

Spider's WEB, or Cob-WEB, a very delicate and wonderful plexus, which that insect spins out of its own bowels, serving it as a sort of toil, or net to catch flies, &c. with. See *Spider*.

WEDGE, *Cuneus*, the last of the five mechanical powers. It is a triangular prism, whose bases are equilateral acute-angled prisms.

The power of the wedge ACBH (plate XLVII. fig. 1. is evident from its consisting of two equal inclined planes AHC and BHC; as it is chiefly of use to separate the adhering parts of wood, and since the power of cohesion in wood is every where variable and uncertain, it is evident there can be no regular calculation of the actual effect of the wedge; but if

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we suppose the power of cohesion in the wood ADEB to be uniform, or to make every where an equal resistance to the wedge ABC, dividing its parts AF and EG, then the power of the wedge would be to the resistance of the wood as their velocities inversely, that is, as the spaces moved through in the same time, that is, as the height of the wedge HC to half its width AH.

WEDNESDAY, the fourth day of the week, so called from a Saxon idol named Woden, supposed to be Mars, worshipped on this day.

Ash-Wednesday, the first day of Lent, so called from the custom observed in the ancient Christian church of penitents expressing their humiliation at this time, by appearing in sack-cloth and ashes. The want of this discipline is at present supplied by reading publicly on Ash-Wednesday the curses denounced in scripture against the several sorts of sins, the people repeating after each curse, Amen.

WEED, a common name for all rank and wild herbs, that grow of themselves, to the detriment of other useful herbs they grow among.

WEEK, *Septimana hebdomada*, in chronology, a division of time comprising seven days. The origin of this division of weeks, or of computing time by sevenths, is greatly controverted. Some will have it to take its rise from the four quarters or intervals of the moon, between her changes or phases, which, being about seven days distant, gave occasion to the division. Be this as it will, the division is certainly very ancient. The Syrians, Egyptians, and most of the oriental nations, appear to have used it from all antiquity; though it did not get footing in the west till Christianity brought it in: the Romans reckoned their days not by sevenths but by ninths, and the ancient Greeks, by decads or tenths.

Indeed the Jews divided their time by weeks, but it was upon a different principle from the eastern nations, God himself appointing them to work six days, and to rest the Sabbath, in order to keep up the sense and remembrance of the creation, which being effected in six days, he rested the seventh.

Passion WEEK, or the *Holy WEEK*, the last week in Lent, wherein the church celebrates the mystery of our Saviour's death and passion.

WEIGH, WAY, or WZY, wags, a weight of cheese, wool, &c. containing

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256 pounds avoirdupois. Of corn, the weigh contains 40 bushels; of barley or malt six quarters. In some places, as Essex, the weigh of cheese is 300 pounds.

WEIGHER, an officer in some cities appointed to weigh the commodities bought or sold in a public balance.

WEIGHING, the act of examining a body in the balance to find its weight.

WEIGHING ANCHOR, is the drawing it out of the ground it had been cast into, in order to set sail, or quit a port, road, or the like.

WEIGHT, GRAVITY, Pendus, a quality in natural bodies, whereby they tend downwards, towards the center of the earth. Or weight may be defined, in a less limited manner, to be a power inherent in all bodies, whereby they tend to some common point, called the center of gravity; and that with a greater or less velocity, as they are more or less dense, or as the medium they pass through is more or less rare.

Sir Isaac Newton demonstrates, that the weights of all bodies, at equal distances from the center of the earth, are proportionable to the quantities of matter each contains. Whence it follows, that the weights of bodies have not any dependence on their forms, or textures; and that all spaces are not equally full of matter. Hence, also, it follows, that the weight of the same body is different on the surface of different parts of the earth, by reason its figure is not a sphere, but a spheroid.

WEIGHT, in mechanics, any thing to be raised, sustained, or moved by a machine, or any thing that in any manner resists the motion to be produced.

WEIGHT, in commerce, denotes a body of a known weight, appointed to be put in the balance against other bodies, whose weight is required.

The security of commerce depending, in a great measure, on the justness of weights, which are usually of lead, iron, or brass, most nations have taken care to prevent the falsification thereof, by stamping or marking them by proper officers, after being adjusted by some original standard. Thus, in England, the standard of weights is kept in the Exchequer, by a particular officer called the clerk of the market.

WELD, or WOLD, in botany, the name of a plant much used by the dyers to give a yellow colour to woollens, silks, cotton, and thread. Its root, which

which is composed of a few ligneous fibres, does not pierce deep: from this root it puts forth leaves about four inches long, and half an inch broad, of a lively green, soft to the touch, and spread circularly near the ground, with some gentle wavings at their edges, but obtuse at their points. Its stem, which rises from amidst these leaves to the height of three feet, or even more, if the soil and culture be very good, often branches out, and is garnished with leaves like those below, though smaller in proportion as they approach the flowers, which grow in long loose spikes at the end of the branches or stem. These flowers, which appear at the latter end of June, are each of them composed of three small irregular petals of a greenish yellow, to which succeeds a globular berry of the same colour, terminated by three points, and in which are inclosed small brown spherical seeds. These seeds ripen in September. The plant becomes entirely yellow when it is dry, and the whole of it, but especially the berry, is used in dying. The slenderest weld, and particularly if it inclines to a russet colour, is accounted the best: that which is larger, and of a dull green, is much less esteemed.

WELDING HEAT, in smithery, a degree of heat given to iron, &c. sufficient only for bending or doubling it up.

WELL, a hole under ground, usually of a cylindrical figure, and walled with stone, brick, &c. and mortar: its use is to collect the water of the strata around it. The rising of water in wells is thus accounted for. Suppose a well be sunk at the foot of a hill to such a depth as will bring the diggers to an eruption of a spring, whose water is brought by a duct from a cavity in the hill, or otherwise from a pond, a river, the sea, &c. it is evident the water in the well will rise from the bottom to an altitude, where the surface of the water is upon a level with that in the reservoir, and thus constitutes a well.

WELL, in the military art, a depth which the miner sinks under ground, with branches or galleries running out from it; either to prepare a mine, or to discover and disappoint the enemy's mine.

WELL-HOLE, in building, the hole left in a floor for the stairs to come up through. See *Stairs*.

WEN, a tumour or excrescence that arises on different parts of the body, and contains a cystus, or bag filled with some peculiar matter, of which physicians

reckon three kinds, viz. when this matter is soft resembling pulp, the wen is called *artheroma*; if like honey, *meliceris*; and if like suct, *stomatoma*. See *Tumour*, &c.

WERE, in our old law-books, denotes a sum paid for killing a person, when such crimes were punished with pecuniary mulct, and not death.

WEST, in cosmography, one of the cardinal points of the horizon, diametrically opposite to the east; and strictly defined, the intersection of the prime vertical with the horizon, on that side the sun sets in. See *Horizon*.

In astronomy, west is chiefly used for the place in, or towards which, the sun or stars sink under the horizon. Thus we say, the sun, Mars, &c. are in the west. The point the sun sets in, when in the equator, is particularly called, the equinoctial west, or point of true west. See *Equinoctial*.

In geography, west and western, are applied to several countries, &c. situate towards the point of sun-setting, with respect to certain others. Thus the Roman empire was anciently, and the German empire is at present, called the empire of the west or the western empire, in opposition to that of Constantinople, which is called the eastern empire. The Roman church is called the western church, in opposition to the Greek church. The Italians, French, Spaniards, &c. are called western nations, in respect to the Asiatics; and part of America, the West-Indies, in respect to the East-Indies.

* **WESTMORELAND**, a county of England, 40 miles in length, and 21 in breadth; bounded on the N. W. by Cumberland, on the W. and S. by Lancashire, and on the E. by Yorkshire. It contains 26 parishes, eight market-towns, and sends four members to parliament, two for the county, and two for Appleby. The air is very sharp and cold. It is a mountainous county, but there are some vallies, which are fruitful in corn and pastures; besides, the hills serve to feed a great number of sheep. The principal rivers are the Eden, the Ken, the Loan, the Eamon, the Tees, the Lowther, the Hunna, the Winster, the Lavenet-beck, and the Blinkern-beck. There are also four noted meers or lakes, called Ulla-water, Broad-water, Horns-water, and Winnander-meer. The principal town is Appleby.

* **WESTPHALIA**, one of the circles of Germany, bounded on the E. by the circle of Lower-Saxony, on the S. by Hesse, Westerwalde, and the Rhine, on

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the W. by the United Provinces, and on the N. by the German Sea. The air is cold, the soil indifferent, and in many places marshy. The horses are large, and the hogs are in high esteem, especially the hams. The principal rivers are the Weser, the Embs, the Lippe, and the Rouer. It contains several sovereignties, as the bishoprics of Osnabrug, Munster, Paderborn, the abbey of Corvey, the principality of Minden, the counties of Ravenburg, Tecklenburg, Ritburg, Lippe, Lemgow, Spiegleburg, Schawenburg, Hoye, Diepholt, Delmenhorst, Oldenburg, Embden, East-Friesland, Bentheim, Lingen, and Stenfort; these are to the N. of the river Lippe. To the S. of it are the abbey of Essen and Verden, the town of Dortmund, the counties of Mark, Homburg, and Bencklinckhausen, the duchies of Westphalia, Berg, and that of Cleves. Munster is the most considerable town.

* **WESTPHALIA**, (duchy of), is in the circle of Westphalia, and is bounded on the N. by the bishoprics of Munster and Osnabrug, and county of Lippe, on the W. by that of Marck, on the S. by the territory of Nassau, and on the E. by the counties of Wittenstein, Hartzfeld, Waldeck, and the landgraviate of Hesse, being about 40 miles in length, and 25 in breadth. Arensburg is the capital town.

WHALE, *Balæna*, in zoology, a genus of fishes, distinguished by having certain laminae, of a horny substance, in the upper jaw, which supply the place of teeth, and usually no fin upon the back: to this it may be added, that the fistula, or aperture for the discharge of water, is double, and situated either on the forehead, in the middle of the head, or in the rostrum. The *Balæna* with the fistula in the middle of the head, and the back ridged towards the tail, is the fish determinately and properly called the whale, though the physeter, as well as that with the upper jaw longest, and with a long spine on the back, as that with the back-fin very tall, and the summit of the teeth plane, is the former called the crooked tooth whale, and the latter the plane tooth whale; as is also that physeter, which is a species of the *Balæna*. The *Balæna*, or the whale properly so called, grows to a monstrous size; the head is extremely large, and of an irregular figure, the lower jaw is much larger than the upper, and covers it at the sides; the upper is narrow and oblong, the fistula is double or has two distinct apertures, and

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is situated in the middle of the head, between the eyes; the eyes are very small in proportion to the enormous bulk of the head, and are placed a great distance from one another; the whole head is somewhat depressed, and has several irregularities on its surface: the body is very thick, and somewhat rounded, but towards the extremity of the back, there is a subacute angle, extending itself longitudinally to the tail; the tail is somewhat forked, very large, and in its horizontal situation, makes a very singular figure. This is an inhabitant of the most northern seas, the principal object of the Greenland fishery, and the first known species.

WHALE-BONE, otherwise called, whale-fins, in commerce, a commodity procured from the whale, used as stiffening in stays, fans, busks, screens, &c. What we call whale-bone, or fins, is a horny lamina in the upper-jaw of the *Balæna*, which supply the place of teeth, but there are none such in the lower-jaw. These laminae are commonly called whickers, which, split and fashioned, are the whale-bone. The pizzle or genital member of the animal serves likewise for the same purpose.

WHARF, a space on the banks of a haven, creek, or hithe, provided for the convenient loading and unloading vessels upon.

The fee paid for the landing of goods on a wharf, or for shipping them off, is called wharfage, and the person who has the direction or oversight of the wharf, receives wharfage, &c. is called the wharfinger.

WHEAT, *Triticum*, the name of a well known plant, greatly cultivated in many parts of the world, especially in England.

It has been very justly observed by the ancients, as well as moderns, that wheat will grow in almost any part of the world, and that, as it is the plant most necessary to mankind, so it is the most general, and the most fruitful. It thrives not only in temperate climates, but also in very hot, and very cold regions; and, when sown in places where it never grew spontaneously, succeeds as well as where it has been always common. The success of our crops of wheat in America plainly prove this: and in Peru and Chili in particular, where this grain was not known till the Europeans introduced it there, it now produces as large a crop as in most parts of Europe.

Wheat should be sowed in autumn, and always

always when the ground is moist. In the downs of Hampshire, Wiltshire, and Dorsetshire, farmers begin to sow their wheat in August, if any rain has fallen, and even employ their people to sow one place, while they reap another, if wet weather interrupts them in their harvest: for if the corn is not forward in autumn, so as to cover the ground before winter, it seldom does well on those high dry lands, especially if the ensuing spring prove likewise dry. In low strong lands, some husbandmen think they are in good season, if they get their wheat into the ground by the middle of November; nay, it sometimes is Christmas, or even later, before all their wheat is sown. But this late sown wheat, besides being apt to run too much to straw, especially if the spring be moist, is liable to be thrown out of the ground by frosts.

In general, all wheat succeeds best upon strong soils, especially if they have been well drained, so that the corn lies dry: but as some sorts of this grain thrive better in some soils than in others, it might redound to the public welfare if more particular observations were judiciously made in regard to each kind, than have hitherto been. The white egg-shell wheat is reckoned best for light lands, and to sow with rye for mellow; because it ripens soonest. It should also be the earliest in the ground. This species is much sown in Essex, upon their hazely brick-earths, or loams; as the red wheat, and the Poland bearded wheat also is there, and in Hertfordshire upon stiff yellow clays. The white Poland, or pole-rivet wheat, has not a hollow straw, and therefore is not so subject to lodge as other corn that has. This kind is particularly fit for lands where the crop is apt to run much to straw.

In Oxfordshire they have a sort of wheat which they call long-coned wheat, and reckon the best for rank clays. Its straw not being hollow, it is the less liable to lodge; and farmers observe that it is the least apt to be mildewed, or be eaten by birds, from which last it is greatly guarded by its long rough awns; but the flour of it is somewhat coarse. Their white kind of red-eared wheat has a white ear and a red grain, and is a very good sort for clayey land. It yields a good crop, and seldom smuts.

In Staffordshire they reckon the red Lammas or bearded wheat the best for cold lands or stiff clays.

In Berkshire is a wheat called pendu-

lum-wheat, from the hanging of its ears much like the cone-wheat.

In Northamptonshire, they have a sort of wheat with a white straw and reddish ear and grain; much commended for the plumpness and largeness of the grain, and the strength of the straw, which prevents its being subject to lodge; nor is it apt to be eaten by birds. They have also a red-eared bearded wheat, and a sort of pollard or duck-bill wheat, as it is called, known in Suffolk by the name of fuller's wheat, which has so close and thick a husk, that the birds never injure it. Mr. Miller observes that this sort of wheat grows very tall, and, if it be sown too thick, is very apt to be lodged by rain and wind; for that its ears are large and heavy, and incline on one side, as the grain increases in weight; but that, if its roots are at a proper distance from each other, it will tiller greatly and have strong stalks, and that the grain of this wheat yields more flour in proportion than that of any other sort. The awns of this wheat always drop off when the grain is full grown.

Smyrna-wheat, commonly called many-eared wheat, because several lesser or collateral ears grow around the bottom of the main ear, which is very large in its state of perfection, requires more nourishment than the common husbandry in the large way can give it, and therefore is not cultivated by our farmers: but it would, probably, do extremely well in the horse-hoeing husbandry, where the quantity of food can be enlarged almost at pleasure. For the same reason maiz, commonly called Turkey, or Indian corn, is fittest for this last husbandry.

Some gentlemen have been curious enough to procure their seed wheat from Sicily, and it has succeeded very well as to the growth: but the grain of this species has proved too hard for our English mills to grind.

The best time for sowing wheat is about the beginning of September, especially if any rain has fallen; a circumstance so essential, that if the earth be very dry, the farmer had better stay till friendly showers have moistened his soil, than put his corn in ground where it will not grow before it has been wet, let the time be ever so long. Mr. Mortimer says he has known wheat to be so mustied and spoiled by laying long in the ground, before rain came, that it has never grown at all: to which he adds, that he has likewise seen very good crops of wheat from seed sown

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in July. At all events, the husbandman should certainly have his wheat sowing finished by the middle of October. Whoever neglects this shews in so doing, a want of proper œconomy in his affairs, and will have cause to repent the delay.

Early sowings require less seed than late ones, because the plants then rise better, and acquire strength to resist the winter's cold. More seed should always be allowed for poor lands than for rich, because a greater number of plants will perish on the former. Rich lands, sowed early, require the least seed of any.

Wheat is ripe when its straw is turned yellow, its ears hang, no greenness appears in the middle of them, and the grain is hard when bitten. From four to five quarters is reckoned a good crop: but some would hardly credit how much beyond this the produce of good ground, thoroughly well cultivated, may be increased. Those who are sensible of the vast advantages of a perfect culture, will not be surprised at Mr. Miller's assuring us that he has known eight and ten quarters, and sometimes more, reaped from an acre, over the whole field, where the corn has stood thin upon the ground; and that he has been informed by persons of great credit, that even twelve quarters have been reaped from an acre of land drilled and managed with the horsehoe.

Both wheat and rye may be cut somewhat before they are thoroughly ripe, especially if they be lodged; for if the straw be broken, it will no longer convey any nourishment to the grain. M. Duhamel seems to think this even the most eligible way for wheat, because the grain will harden afterwards in the sheaf; whereas, if it be let stand till it is too ripe, it will shed greatly in cutting, binding, and carrying home. It is partly to prevent this inconvenience, that good husbandmen tie it in the evening, and carry it off early the next morning. The ancients reaped their corn before it was full ripe, as Pliny informs us. And indeed it must be allowed that very great disadvantages necessarily attend the letting of some sorts of corn stand till their grains have acquired their utmost maturity.

WHEEL, *Rota*, in mechanics, a simple machine, consisting of a round piece of wood, metal, &c. which revolves on an axis.

WHEEL is also the name of a kind of punishment which great criminals are put to in several countries. In France, their

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assassins, parricides, and robbers on the highway, are condemned to the wheel; i. e. to have their bones first broken with an iron bar on a scaffold, and thus to be exposed and left to expire on the circumference of a wheel. In Germany they break their bones on the wheel itself.

WHEEZING, a name given by our farriers to a distemper in horses, in which they draw their breath with difficulty and noise.

WHELP, the young of a dog, fox, lion, or any wild beast. Nothing is more essential to the having a good pack of hounds, than a proper care of the whelps, and of the parents from which they are to be bred. The bitches in particular should be carefully chosen, and should be such as are strong and well proportioned; they must also have large ribs and flanks.

WHETSTONE, *Cor*, a stone which serves for the whetting of knives and other tools upon.

WHEY, the serum, or watry part of milk.

WHIFFLER of a company, in London, a young freeman who goes before, and waits on the company on solemn assemblies.

WHIG, a party in England opposite to the tories, from whom they differ chiefly in their political principles. See *Tories*.

WHIRL-Pool, an eddy, vortex, or gulph, where the water is continually turning round. In rivers these are very common, from various accidents, and are usually very trivial, and of little consequence. In the sea they are less common, but more dangerous.

WHIRL-WIND, a wind that rises suddenly, exceeding rapid and impetuous, when risen, but soon spent.

WHITE, one of the colours of natural bodies. See *Colour*.

White is not so properly said to be any one colour, as a composition of all colours; for it is demonstrated by Sir Isaac Newton, that those bodies only appear white, which reflect all the kinds of coloured rays alike.

WHITE-FRIARS, a name common to several orders of monks, from their being clothed in a white habit.

WHITE-LEAD, also called ceruse. See *Ceruse*.

WHITE-LINE, among printers, a void space of the depth or breadth of a line. See *Printing*.

WHITE-MEATS, include milk, butter, cheese, white-pots, custards, and other

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other kinds of food made of milk or eggs. Some also add chickens, veal, and fish.

WHITE POT, milk or cream beat up with the yolks of eggs, mixed with sugar and spice, and baked in an earthen dish, with slices of bread in it.

The cooks furnish us with a variety of dishes under this denomination; as the rice white-pot, Westminster white-pot, Norfolk white-pot, &c.

WHITE-RENT, a rent or duty of 8 d. paid annually by every tinner in the county of Devon, to the duke of Cornwall.

WHITENESS, *Albugo*, the quality which denominates a body white. See *Colour*.

WHITING, in ichthyology, the English name for the white gadus with no beard, and with three fins on the back, and the under jaw longest.

The head and body of this species is compressed, the back is convex, the anus is at a great distance from the tail, and is, indeed, very near the head; the colour of the whole fish is a silvery white, except that on the back there is an admixture of a blackish tinge: the scales are very small, roundish and white; the nostrils have each a double aperture, and are placed high; the eyes are very large, the iris silvery, and the pupil large and blue; the teeth are very numerous; the pectoral fins have each six rays; the pinnæ ani are two, and have, the first thirty three, and the second twenty-two rays. This species is frequent in our seas, and much esteemed at our tables.

WHITES, in medicine, the same with *fluor albus*.

WHITSUNDAY, a solemn festival of the christian church, observed on the fiftieth day after Easter, in memory of the descent of the Holy Ghost upon the apostles in the visible appearance of fiery cloven tongues, and of those miraculous powers which were then conferred upon them. It is called Whitsunday, or White-sunday, because this being one of the stated times for baptism in the ancient church, those who were baptised put on white garments, as types of that spiritual purity they received in baptism. As the descent of the Holy Ghost upon the apostles happened upon the day which the Jews called Pentecost, this festival retained the name of Pentecost among the Christians.

WHORE, a woman who prostitutes herself for hire.

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WICKER, a twig of the osier shrub, single or wrought.

WICKET, a small door in the gate of a fortified place, &c. or a hole in a door, through which to view what passes without.

* **WICKLIFF**, **JOHN**, a celebrated reformer, or more properly the father of the reformation, as he was the first who ventured to bring religion to the test of Scripture. He was born in Yorkshire in 1324, and was educated at Oxford, where he taught divinity with reputation, and had a great number of scholars amongst the bachelors and young doctors of divinity; but teaching some new opinions, he was excluded from his professorship, when he continued only curate of Lutterworth, and was supported in his opposition to the church by John of Gaunt, duke of Lancaster, Henry, lord Percy, and some others, and boldly preached throughout all England, attended by a great number of his disciples, who maintained his opinion with incredible zeal. He maintained, that the church of Rome is not the head of other churches, and that the bishop of that see has no pre-eminence over the bishops in other countries; that neither the clergy nor the monks, according to the law of God, ought to possess temporal power, &c. In short, his tenets were much the same with those of Calvin. These doctrines beginning to spread, and to make much noise, Simon Sudbury, archbishop of Canterbury, assembled a council at Lambeth in February, 1377, to which Wickliff was cited, in order to give an account of his doctrines. This reformer boldly appeared, accompanied by the duke of Lancaster, who had then the principal share of the government, and by other lords, and there defending himself, was dismissed without condemnation; but pope Gregory XI. being informed of his doctrines, and the protection he received from the great, wrote to the bishops of England to cause him to be apprehended; or, if that could not be done, to cite him to appear at Rome: sending them, at the same time, nineteen propositions advanced by Wickliff, which he condemned as heretical and erroneous. Upon this a second council was held at Lambeth, when he again appeared and avoided condemnation, the lords and people declaring for him with such resolutions, that the bishops durst only command him to be silent. Wickliff, however, continued

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to propagate his opinions, and drew after him a great number of followers. Upon which William Courtnay called a council in the year 1382, in which he condemned twenty-four propositions of Wickliff, or his disciples, ten as heretical, and fourteen as erroneous. The council also obtained a declaration of Richard II. against all who should preach the new doctrines; by virtue of which many Wickliffites were apprehended, and proceeded against with great severity. But while these things were carrying on with much heat and confusion, Wickliff himself died at Lutterworth, where he had kept himself concealed, the 2d of December, 1384, leaving many books behind him for the establishment of his doctrines. The chief of them is a dialogue entitled *Triologus*, from the three speakers in it. He wrote many pieces both in Latin and English. Calmet informs us, that he translated the whole Bible, and that there were several manuscript copies of this translation, but that it was never printed. It ought not to be omitted, that the austerity of his life, and the sanctity of his manners, added great weight to his doctrines. He was indefatigable in his labours, and generally went about barefooted in the garb of a pilgrim. Wickliff, after his death, suffered many anathemas; kings, popes, and councils held in various places, repeated their condemnations. King Richard caused his writings to be thrown into the fire; and king Henry V. who, though a brave prince, was a cruel bigot, exterminated the rest of that sect, several of whom he caused to be burnt at the stake.

WIDOW, a woman who has lost her husband.

In London, a freeman's widow may exercise her husband's trade, as long as she continues such.

Marriage with a widow, in the eye of the canon law, is a kind of bigamy.

WIFE, a married woman, or one joined with, and under the protection of, an husband. A wife, in our English law, is termed *feme covert*; and in the judgment of the law is reputed to have no will, as being supposed intirely under, and subject to, that of her husband. The wife can make no contract without the husband's consent; and if any goods or chattels be given her, they all immediately become her husband's: even necessary apparel is not her's in property. All her personal chattels, which she held at her marriage, are so much her hus-

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band's, that after his death they shall not return to her, but go to the executor or administrator of her husband, except only her paraphernalia.

The wife partakes of the honour and condition of her husband; but none of her dignities come by marriage to her husband; and as the law supposes the husband to have the full power over his wife, he is obliged to answer for all her faults and trespasses. If a wife bring forth a child begot by a former husband, or any other before marriage, but born after marriage with another man; this latter must own the child; and that child shall be his heir at law; and if a wife bring forth a child during her husband's absence, though it be of many years; yet if he lived all the time within the island, he must father the child, and the child, if first-born, shall inherit. If the wife has a jointure, and during her marriage is made pregnant by her husband, which must appear by the child's being born alive, the husband shall have all his wife's lands for life; but if the wife have no jointure settled before marriage, she may, after her husband's death, challenge the third part of his yearly rents of land, during her life.

* **WIGHT, ISLE OF**, a part of Hampshire, from which it is separated by a narrow channel. It is above twenty miles in length, and twelve in breadth, consisting of good arable and pasture land, hills, and valleys, woods and champaign lands, and is equal to any part of England of the same dimensions, either in fertility or pleasantness of situation. Here are plenty of sea fish, rabbits, hares, partridges, pheasants, and other game. In the middle of the island is a ridge of hills, on which are flocks of sheep with exceeding fine wool. It contains thirty-six towns, villages, and castles, and fifty-six parish churches. The principal town is Newport.

WILDERNESS, in gardening, a kind of grove of large trees, in a spacious garden, in which the walks are commonly made either to intersect each other in angles, or have the appearance of meanders and labyrinths. See **GROVE** and **LABYRINTH**.

WILL, Voluntas, is usually defined a faculty of the mind, whereby it embraces or rejects any thing represented to it, as good or evil, by the judgment.

WILL, or last WILL, in law, signifies the declaration of a man's mind and intent

intent relating to the disposition of his lands, goods, or other estate, or of what he would have done after his death.

* **WILLIAM I.** duke of Normandy, king of England, and one of the greatest generals of the XIth century, was born at Falaise, and was the natural son of Robert, duke of Normandy, by Arlette, a furrier's daughter. After the death of Robert, which happened in 1035, William, who was his only son, succeeded him. His relations, however, disputed the succession, but being favoured by Henry I. king of France, he triumphed over them, defeated count d'Arques, took Maine, and carried the war into Anjou. Some time after he paid a visit to Edward the Confessor, who treated him with great respect, and took a tour with him through England. Some time after Edward the Confessor dying without issue, in 1065, appointed him his heir. On which William sent to demand the crown, and soon after landed at Pevensey, in Suffex, with a powerful army, and thence proceeding to Hastings, built a strong fort. Harold had placed himself on the throne, and now marched to oppose him, on which a bloody battle ensued, the 14th of October, 1066, in which William obtained a complete victory, though he had three horses killed under him, and lost a great number of his troops. On the side of the English, Harold was slain, with many of the nobility, and about sixty thousand soldiers. The Normans had besides, the advantage of long bows, of the use of which the English were then ignorant. But, in spite of these, the English with their battle-axes kept so close together, that they remained invincible, till the Normans pretending to fly, brought them into disorder. Notwithstanding this victory, William could have little hopes of gaining the throne by right of conquest; he, therefore, gave out that he came to revenge the death of prince Alfred, brother to king Edward, to restore Robert archbishop of Canterbury to his see, and to obtain the crown as his right, on account of its being bequeathed to him by Edward the Confessor. He cannot, therefore, be properly said to obtain the crown by conquest, since these motives engaged many of the English in his favour. William was tall, broad set, and had great strength. His passions were violent, but he had much wisdom, and an equal share of dissimulation. He marched directly to London, but on the way was met by a large body of Kentish

men, each with a bough, or branch of a tree in his hand. This army was headed by Stigand the archbishop, who made a speech to the conqueror, in which he boldly demanded the preservation of their liberties, and let him know that they were resolved rather to die than to part with their laws, and live in bondage. William thought proper to grant their demands; he agreed to govern them by the laws of Edward the Confessor, and to suffer them to retain their ancient customs. Upon his coronation at Westminster, he was sworn to govern by the laws of the realm; and though he afterwards introduced some new forms, he preserved trials by juries, and the borough law. He instituted the courts of Chancery and Exchequer; but at the same time disarmed his English subjects, and forbade their having any light in their houses after eight o'clock at night, when a bell was rung called Curfew or Cover-fire, at the sound of which all were obliged to put out their fires and candles. He conquered several powers who invaded England, obliged the Scots to preserve the peace they had broken, compelled the Welch to pay him tribute, refused to pay homage to the pope, built the tower of London, and caused all public acts to be made in the Norman tongue. He oppressed the people by taxes, and caused all England to be surveyed and rated, and had the men numbered, in a work called Domesday-book, which is still extant. He resolved to chastise the French, who invaded Normandy, and after that to reduce his son Robert; but Robert no sooner found that he was engaged with his father, than he dutifully submitted to him, notwithstanding his being victorious. Some time after William declared war against Philip I. king of France, laid waste the country, burnt Mantes, and ravaged it with fire and sword to the gates of Paris; but approaching too near the flames of Mantes, the heat of the fire, together with the warmth of the season, threw him into a fever, which being increased by a fall from his horse in his return to Roan, he died in a village near that city, the 9th of September, 1087, in the 64th year of his age, after a reign of fifty-four years in Normandy, and twenty-one in England. He was interred at Caen, in Normandy.

* **WILLIAM II.** surnamed Rufus, or Red, from the colour of his hair, was the second surviving son of William the Conqueror,

Conqueror, and succeeded his father the 27th of September, 1087. He was then thirty years of age, and at the same time Robert, his elder brother, succeeded by his father's will to the duchy of Normandy; but he resolved to assert his right of primogeniture to the crown of England, and several of the Norman nobility espoused his cause. William, however, defeated a body of his troops in Kent, and soon after prevailed on him to conclude a peace. The two brothers then made war on Henry, their youngest brother, whom they besieged in Mount St. Michael, where the king riding one morning unattended, fell in with a party of Henry's soldiers, and endeavoured to force his way through them, but was dismounted, and a soldier was going to dispatch him, when he saved his life by crying out, "Hold, fellow, I am the king of England." Upon this the man dropping his sword, raised the monarch from the ground, and received from him the honour of knighthood, and other favours. The brothers being now soon reconciled, William turned his arms against Scotland, and defeated the army of king Malcolm, who with his son were killed just before in an ambush laid by Mowbray, governor of Northumberland. But soon after, Mowbray finding that the king neglected to reward his services, joined with other noblemen to set the crown on the head of Stephen, grandson to William the Conqueror: upon which the king marched into Yorkshire, reduced Bamborough, took Mowbray prisoner, and put an end to the rebellion. But at length William hunting in the New-Forest, was killed by an arrow-shot by Walter Tyrrel, his particular favourite, who aiming at a deer, shot the king in the breast, on which he immediately expired, on the 2d of August, 1100, aged forty-four, after a reign of thirteen years. It is said so little respect was paid to his body, that it was conveyed in a coal-cart to Winchester.

* WILLIAM III. of Nassau, prince of Orange, stadtholder of the United provinces, king of England, &c. was the son of William of Nassau, prince of Orange, by Henrietta-Maria, the daughter of Charles I. king of England, and was born at the Hague, the 4th of November, 1650. He was about twenty-two years of age when, in 1672, he was elected stadtholder, and declared general of the Dutch troops, in order to put a stop to the rapidity of the conquests made

by Lewis XIV. In 1673, he took the strong town of Naerden, and obliged the French to quit Utrecht, and several considerable places where they had garrisons. Soon after he engaged the French at Senef, where he gained great honour by his courage and conduct, and obtained a victory after a most bloody engagement. On the 17th of October, 1677, he embarked for England, and the 4th of November was married to the princess Mary, the eldest daughter of the duke of York, and the 19th of the same month departed from London with his princess, and landed at Terbyde. In August, 1678, he attacked and defeated the duke of Luxemburg in his quarters, near the abbey of St. Denis. In the heat of the action he advanced so far, that he was in great danger of being killed. On the 29th of June, 1684, a treaty was signed at the Hague, which put an end to the war. James, duke of York, having ascended to the throne of England, after the death of his brother, Charles II. endeavouring to restore the popish religion, and to destroy the civil and religious liberties of the people, they naturally cast their eyes on the prince of Orange, and applied to him for deliverance, on which he landed at Torbay, the 5th of November, 1688, and was joyfully received by almost the whole nation. James now made his escape to France, and after his departure, the lords and commons agreed, after much dispute, that he had abdicated the throne, upon which the prince of Orange, and the princess Mary, were proclaimed king and queen the 13th of February, 1689, and crowned the 11th of April following. An attempt was then made by the opposite party to secure Scotland for James II. but on the 26th of May, 1689, the two armies meeting at Killickranny, in the shire of Perth, lieutenant-general Mackay, who commanded for king William, obtained a complete victory, after which the whole island of Great-Britain submitted to him. In the mean time Tyrconnel had disarmed great part of the protestants of Ireland, and formed an army of papists, amounting to thirty thousand foot and eight thousand horse, while the protestants in the North took up arms, and seizing on Kilmore, Coleraine, Inniskilling, and Londonderry, declared for king William and queen Mary. At this time, James landing at Kinfale, the 12th of March, 1688-9, made his public entry into Dublin; he soon after put himself at the head of twenty thousand

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land men, and was twice reinforced by the French, who each time joined him with 5000 men. He took Coleraine and Kilmore, and laid siege to Londonderry; but soon after returned to meet his parliament in Dublin, where he passed an act to attain two or three thousand Protestant lords, ladies, clergymen, and gentlemen of high treason. In the mean time the siege of Londonderry was vigorously carried on. The garrison of Inniskilling, at the same time, did wonders; particularly the day before the siege of Derry was raised, they advanced near twenty miles to meet about 6000 Irish, and defeated them, killing near 3000, though they themselves were not above 2000, and had not above 20 killed, and 50 wounded. In August the duke of Schomberg arrived in Ireland with 10,000 men, took Carrickfergus in four days, and performed other acts of bravery and conduct. In June, 1690, king William landed in Ireland with a gallant army, and on the 1st of July fought the memorable battle of the Boyne, in which he gained a complete victory over the French and Irish, and obliged K. James to retire to Dublin, and make all the haste he could back to France. King William also proceeded to Dublin, and thence to England. The next year the English, under the brave general Ginkle, made themselves masters of Balimore, with incredible bravery passed the Shannon amidst the fire of the enemy, and took Athlone, and the 12th of July fought the glorious battle of Aghrim, wherein 4000 Irish, and their general St. Ruth, were slain, and all their tents, arms, &c. taken. After this entire defeat, Galway surrendered, and Limerick capitulated: and thus an end was put to the war in Ireland. About this time king William formed a grand alliance against Louis XIV. and commanded the allied armies in several battles in Flanders; till at length the French acknowledged him king of England, by the treaty of Ryfwick, concluded in 1697. Being thrown from his horse, his collar-bone was dislocated, and he died the 8th of March 1702, in the 14th year of his reign, and the 52d of his age, and was interred next to his queen, who had died before him, in Henry VII.'s chapel. He left no issue.

WILLOW, *Salix*, in botany. See the article *Salix*.

* **WILTSHIRE**, a county of England, is 52 miles in length and 34 in

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breadth; and is bounded on the W. by Somersetshire, on the N. by Gloucestershire, on the E. by Berkshire and Hampshire, and on the S. by Dorsetshire and Hampshire. It contains 304 parishes, 21 market towns, and sends 34 members to parliament. The principal rivers are, the Willey, the Adder, the two Avons, the Tems, the Kennet, the Durrill, the Nadder, and the Were. The air is generally good. The N. part is hilly, the S. level, and the middle plain, and full of downs, intermixed with bottoms, wherein are rich meadows and corn-fields. Salisbury is the principal town.

* **WINCHESTER**, a city in the county of Hampshire, with two markets, on Wednesdays and Saturdays. It is pleasantly seated in a valley between hills, on the river Itching. It has five parish-churches, besides the cathedral, which is a large beautiful structure. The other remarkable buildings are, the bishop's palace, the hall where the assizes are kept, the college or school, and an infirmary, erected here for the county by voluntary subscription. It has a fair, kept on St. Giles's hill, on Sept. 12. for horses, cheese, and leather, and another on Magdalen hill, on August 2. for the same. It is 67 miles W. by N. of London. The city is governed by a mayor. Long. 1. 24. W. Lat. 54. 6. N.

WIND, *Ventus*, in physiology, a stream of air flowing out of one place, or region, into another. See *Air*.

As the air is a fluid, its natural state is that of rest, which it endeavours always to keep or retrieve by an universal equilibrium of all its parts. When, therefore, this natural equilibrium of the atmosphere happens by any means to be destroyed in any part, there necessarily follows a motion of all the circumjacent air towards that part to restore it; and this motion of the air is what we call wind.

Hence, with respect to that place where the equilibrium of the air is disturbed, we see the wind may blow from every point of the compass at the same time; and those who live northwards of that point have a north wind; those who live southwards, a south wind; and so of the rest; but those who live on the spot, where all these winds meet and interfere, are oppressed with turbulent and boisterous weather, whirlwinds, and hurricanes, with rain, tempest, lightning, thunder, &c. For sulphureous exhalations

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tions from the south, torrents of nitre from the north, and aqueous vapours from every part, are there confusedly huddled, violently blended together, and rarely fail to produce the phenomena above mentioned. See *Rain, Lightning, &c.*

Cardinal WINDS, are those which blow from the east, west, north, and south, which are called cardinal points.

Collateral WINDS, those which blow between the cardinal points. The number of these is infinite, as the number of points they blow from are; a few of them only are considered in practice, and these have names compounded of the cardinal points between which they blow. See *Compass*.

WIND-FLOWER, *Anemone*, in botany. See *Anemone*.

WIND HATCH, in mining, a term used to express the place at which the ore is taken out of the mines.

WIND-MILL, a mill which receives its motion from the impulse of the wind.

WIND-SAILS, in a ship, are made of the common sail-cloth, and are usually between twenty-five and thirty feet long, according to the size of the ship, and are of the form of a cone ending obtusely: when they are made use of, they are hoisted by ropes to about two thirds or more of their height, with their basis distended circularly by hoops, and their apex hanging downwards in the hatch-ways of the ship; above each of these, one of the common sails is so disposed, that the greatest part of the air rushing against it, is directed into the wind-sail, and conveyed, as through a funnel, into the upper parts of the body of the ship.

WIND-TACKLE-BLOCKS, in a ship, are the main double blocks, which being made fast to the end of a small cable, serve for hoisting of goods into the ship, &c.

WIND-TAUGHT, a sea term signifying as much as stiff in the wind. See *Taught*.

WINDWARD, in the sea-language, denotes any thing towards that point from whence the wind blows, in respect of a ship: thus windward tide is the tide which runs against the wind. See *Tide*, &c.

WINDAGE of a Gun, the difference between the diameter of the bore, and the diameter of the ball.

WINDLASS, or **WINDLACE**, a machine used to raise huge weights withal, as guns, stones, anchors, &c.

It is very simple, consisting only of an

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axis or roller, supported horizontally at the two ends, by two pieces of wood and a pulley: the two pieces of wood meet at top, being placed diagonally, so as to prop each other; the axis, or roller, goes through the two pieces, and turns in them. The pulley is fastened at the top where the pieces join. Lastly, there are two staves, or handspikes, which go thro' the roller, whereby it is turned, and the rope which comes over the pulley is wound off and on the same.

WINDOW, *q. d.* wind-door, an aperture, or open place in the wall of a house, to let in the wind and light.

WINE, *Vinum*, a liquor made of the expressed juice of the grape, which, immediately after pressure, is called must, and being fermented becomes wine.

WING, *Ala*, that part of a bird, insect, &c. whereby it is enabled to fly. Willoughby observes, that all birds whatsoever have wings, or rudiments of wings, which answer to the fore-legs in quadrupeds. Among land-fowl he observes, that the ostrich, cassowary, and dodo; and among water-fowl, the penguin, have wings altogether useless and unfit for flight.

The wings of gnats are of a very curious structure, and well worthy the use of the microscope, to see them distinctly. It is well known, that on touching the wings of butterflies, a coloured powder is left on the fingers, which, though to the naked eye it appears a mere shapeless dust, yet, when examined by the microscope, it is found to be very regularly figured beautiful bodies, in form of feathers and scales: these are of various figures, and all of them very elegant. The generality of flies have nothing of this kind; but the close examination of the wings of the gnat will shew, that they are not wholly destitute of them: they are much more sparingly bestowed, indeed, upon the gnat than on the butterfly; but then they are arranged with great regularity.

WINGS, in heraldry, are borne sometimes single, sometimes in pairs; in which case they are called conjoined. When the points are downward, they are said to be inverted; when up, elevated.

WING, in botany, the angle formed between the stem and the leaves, or pedicles of the leaves of a plant.

WINGS, *Alig*, in military affairs, the two flanks or extremes of an army, ranged in form of battle; being the right and left sides thereof.

WINDING

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WINGED SEEDS, are those which are furnished with down or hairs, by the help of which they are buoyed up in the air, and carried a considerable distance; such are those of the dandelion, sow-thistle, &c.

WINNOW, signifies to fan or separate corn from the chaff by the wind.

WINTER, one of the four seasons or quarters of the year. Winter commences on the day when the sun's distance from the zenith of the place is greatest, and ends on the day when its distance is at a mean between the greatest and least. Notwithstanding the coldness of the season, it is proved by astronomers, that the sun is really nearer the earth in winter than in summer. Under the equator, the winter as well as other seasons, returns twice every year; but all other places have only one winter in the year, which in the northern hemisphere begins when the sun is in the tropic of Capricorn, and in the southern hemisphere when in the tropic of Cancer; so that all places in the same hemisphere have their winter at the same time.

WINTER, among printers, that part of the printing press serving to sustain the carriage.

WINTER'S BARK, *Cortex Winterana*, in botany, a name given to the bark of the white or wild cinnamon-tree.

WINTER-RIG, among husbandmen, signifies to fallow or till the land in winter.

WIRE, a piece of metal drawn through the hole of an iron into a thread, of a fineness answerable to the hole it passed through. Wires are frequently drawn so fine, as to be wrought along with other threads of silk, wool, flax, &c. The metals most commonly drawn into wire, are gold, silver, copper, and iron.

WISDOM, usually denotes a higher and more refined notion of things immediately presented to the mind, as it were by intuition, without the assistance of ratiocination. In this sense wisdom may be said to be a faculty of the mind, or at least a modification and habit thereof. Sometimes the word is more immediately used, in a moral sense, for what we call prudence, or discretion, which consists in the soundness of the judgment, and a conduct answerable thereto.

WIT, a faculty of the mind, consisting, according to Mr. Locke, in the assembling and putting together of those ideas with quickness and variety, in which any resemblance or congruity can

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be found, in order to form pleasant pictures and agreeable visions to the fancy.

WIT is also an appellation given to the person possessed of this faculty: and here the true wit must have a quick succession of pertinent ideas, and the ability of arranging and expressing them in a lively and entertaining manner: he must at the same time have great energy and delicacy in his sentiments; his imagination must be sprightly and agreeable, without any thing of parade or vanity in his discourse: but it is not, however, essential to the character of a wit, to be ever hunting after the brilliant, studying sprightly turns, and affecting to say nothing but what may strike and surprize.

WITCHCRAFT, a kind of sorcery, especially in women, in which it is ridiculously supposed that an old woman, by entering into a contract with the devil, is enabled, in many instances, to change the course of nature; to raise winds; perform actions that require more than human strength; and to afflict those who offend them with the sharpest pains, &c. In the times of ignorance and superstition, many severe laws were passed against witches, by which great numbers of innocent persons, distressed with poverty and age, were brought to a violent death; but these are now happily repealed.

WITHERS of a Horse, the juncture of the shoulder-bones at the bottom of the neck and mane, towards the upper part of the shoulder.

WITNESS, in law, a person who gives evidence in any cause, and is sworn to speak the truth, the whole truth, and nothing but the truth. A witness ought to be indifferent with respect to each party; for if he will be a gainer or loser by the suit, he is not sworn as a witness. False witnesses, suborners of witnesses, &c. are in England punished with the pillory, in several other countries with death.

WOAD, *Isatis*, in botany, a genus of plants, the flower of which consists of four leaves, which are disposed in form of a cross; out of whose flower-cup rises the pointal, which afterwards turns to a fruit in the shape of a tongue, flat at the edges, gaping two ways, having but one cell; in which is contained, for the most part, one oblong seed. Woad is commonly sown upon a lay, which they plough into high ridges, except the land be very dry; and they harrow the turf till they break it to pieces, and pick out

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all the grass, weeds, and lumps of earth, and fling them into the furrows to rot. The land for this feed ought to be finely plowed and harrowed, and all the clods and turfs broken, and the stones picked up, and carried off.

WOLD, signifies a plain, down, or open champaign ground, hilly and void of wood.

WOLF, *Lupus*, in zoology, a very large and fierce animal, being equal to the biggest mastiff in size, and having much of the general appearance of that creature: the head is large and fleshy; the eyes are large and prominent, and their iris hazle; the ears are short, pectulous, and erect; the teeth are very large, and the animal has a way of shewing them in a frightful manner, by grinning: the neck is robust and thick; the body is large, and the back broad; the legs are very robust; the tail is long and bushy; the natural colour is black, but there are some tawny; and in some places they are in winter perfectly white. The wolf is a very mischievous creature, destroying cattle; and in hard winters attacking houses and villages in whole troops.

WOLF'S BANE, in botany, the English name for the aconitum. See *Aconite*.

WOLSEY, THOMAS, is said to have been the son of a butcher at Ipswich. He studied at Magdalen college, Oxford, where he became acquainted with the learned Erasmus; and in the year 1500 became rector of Lymington in Somersetshire, and at length chaplain to king Henry VIII. and obtained several preferments. Having acquired an entire ascendancy over the mind of Henry VIII. he successively obtained several bishoprics, and at length was made archbishop of York, lord high chancellor of England, and prime minister, and was for several years the arbiter of Europe. Pope Leo X. created him cardinal in 1515, and made him legate à latere; and the emperor, Charles V. loaded him with favours, in order to gain him over to their interest; but, after having first sided with the emperor, he deserted him to espouse the interest of France. As his revenues were immense, his pride and ostentation were carried to the greatest height. He had 1500 servants, among whom were nine or ten lords, 15 knights, and 40 esquires. He promoted the divorce of queen Catharine of Arragon; but at length endeavouring to destroy queen Anne Boleyn, whom

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he charged with heresy, she so effectually vindicated herself to king Henry, that he confiscated all his riches, deprived him of all his places and benefices, except the archbishopric of York and bishopric of Winchester, and ordered him to be sent to the Tower. He was arrested for high treason on his journey to London, by the earl of Northumberland, when, being taken ill, he died on the road, at Leicester, in the year 1533, aged sixty. It is said, that a little before his death, he cried out, "Had I served the God of heaven as faithfully as I did my master on earth, he would not have forsaken me in my old age."

WOMAN, *Fœmina*, in zoology, the female of man. See *Man*.

WOMB, *Uterus*.

WOOD, *Lignum*, a solid substance, of which the branches of trees consist, and deriving its growth from certain juices of the earth. See *Timber*.

WOOD, *Sylva*, in geography, a multitude of trees extended over a large continued tract of land, and propagated without culture. The generality of woods only consist of trees of one kind. The ancient Saxons had such a veneration for woods, that they made them sanctuaries.

WOOD-COCK, *Scelopax*, in ornithology. See *Scelopax*.

The wood cock is a bird of passage, that comes into England about the middle of October, and goes away again in March. During their stay with us, they ramble about from place to place, never remaining above eight or ten days together in the same wood or meadow. They seldom or never fly in the day-time, unless disturbed by men, or by some beast. In whatever places they are put up, they always fly to the thickest wood that lies near, and there hide themselves under the sturdiest and the thickest trees, where they remain all day searching for earthworms, and other food, under the fallen leaves. When night comes, they go out of the woods, and generally resort to watery places, where they may wash their bills, fouled with the taking their prey, and thrusting into the earth; here they remain all the night, and, if there is tolerable shelter, they stay also the day under it; but when there wants this, they fly away to the woods in the morning. In their flight, they choose the shadiest places, and will coast it away to a great distance in search of the highest woods to retire to, that they may be the better secured, and there more defended from

the annoyance of the wind. While they travel under shelter, they always fly low; but when they come to any glade to cross, they mount to a considerable height; but, as soon as they have passed this, they sink again.

They hate flying high, and they are afraid to fly among trees, because, like the hare, they see but very badly straight before them; and it is owing to this imperfection in their sight, that they are so easily taken in nets spread in their places of resort.

WOOD-LAMB, in agriculture, a term used by the farmers of many counties of England, for a sort of soil, from its constant humidity and dark colour, resembling the soil in woods, which, of whatever nature it originally is, will be always made to appear thus from the continual dropping of trees, and the want of a free air and sun, together with the fall of leaves, destroyed and washed to pieces by the wet.

WOOD-LARK, in ornithology. This is one of the sweetest of our singing-birds, and is indeed very little inferior to the nightingale, when in good health: for we are not to judge by such as are made feeble by improper food, or want of cleanliness in their cages. It is one of the tenderest birds we have, and yet it breeds the soonest of any that we know of. They principally frequent gravelly grounds, and the sides of hills, that are exposed full to the sun; and, if there be any stumps of oaks in these places, they always resort to them. The females couple with the males in the beginning of February, at which time, and never before, they part with their last year's brood: immediately after coupling they betake themselves to building their nest. They generally build in lay, or grounds where the grass is rank, and is grown brown. The principal material they use is dry grass, and they always chuse some place sheltered by a good tuft for their nest, to defend themselves from the cold winds, which are very severe at that season. They feed their young principally with a small red worm; but it is very difficult to find this kind, to feed a nest of them under our care, and they will not do well without it; so that they scarce ever come to anything this way.

WOOD-PECKER, *Picus*, in natural history, a genus of birds, with the beak straight, of a polyhedral or many-sided figure, and with its point formed in the manner of a wedge; the tongue is

rounded and very long, it resembles in form a worm, or some other such insect; the toes, in all but one species, stand two before, and two behind, as in the parrot.

WOOF, among manufacturers, the threads which the weavers shoot across with an instrument called a shuttle. The woof is of different matter, according to the piece to be wrought. In taffety, both woof and warp are silk. In mohairs, the woof is usually wool, and the warp silk. In satins, the warp is frequently flax, and the woof silk.

WOOL, *Lana*, the covering of sheep; of which the manufacturers make divers kinds of stuffs, cloths, &c. The wools most esteemed are the English, chiefly those about Leominster, Cotswold, and the Isle of Wight; the Spanish, principally about Segovia, and the French about Berry; which last are said to have this peculiar property, that they will knot or bind with any other sort, whereas the rest will only knot with their own kind. Tavernier affirms, that the wools in Asia are incomparably finer than those of Europe; and there is no doubt but that wool was the golden fleece sought at Colchis. The wools of England have always been in the highest repute, especially abroad. Spanish wools bear a great price among us, to work up with ours, the goodness of which is owing to a few sheep sent into Spain as a present by Henry II. though some say by Henry IV. in 1465.

The fineness and plenty of our wool is owing in a great measure to the short sweet grass in many of our pastures and downs; though the advantage of our sheep's feeding on this grass all the year, without being obliged to be shut up under cover during the winter, or to secure them from wolves at other times, contributes not a little to it.

WOOLEN MANUFACTORY, includes the several sorts of commodities into which wool is wrought. The woollen manufactory makes the principal article in the foreign and domestic trade of Great Britain. It employs the chief of the hands on shore, in its different parts; loads their ships, and brings into the nation the immense riches for which our nation is, at present, so remarkably famous. This staple, however, did not fix itself on this island till about the year 1420, when the art of making woollen cloths was imported from Flanders and Brabant, whose artists in that commodity,

WOR

ty, being driven from their native countries by oppressive taxes, and the severities used in collecting them, took refuge in England. The government spared no endeavours to preserve so valuable an acquisition; but we do not find our nation arrive at any considerable perfection in the woollen manufacture, till the troubles about religion, occasioned by the cruelty of the duke of Alva, and the Spanish inquisition introduced into the Low-Countries, entirely ruined those woollen manufacturers who had settled there, and greatly interfered with the trade established in England. At this time the Dutch artists also joined us, and settled several great manufactures at Norwich, Colchester, Sandwich, Hampton, as well as at London, &c. And from that time this trade throve so prodigiously, that Dr Davenant and Mr. King compute the product thereof in their time, when it was not at the height it is now brought to, to be eight millions sterling, per annum: three-fourths of which, say they, are consumed at home, and the rest abroad.

WORD, in language, an articulate sound designed to represent some idea. *See Sound, Voice, Sign, Idea, &c.*

WORD, or *Watch Word*, in an army or garrison, some peculiar word or sentence, by which the soldiers know and distinguish one another in the night, &c. and by which spies and designing persons are discovered. It is used also to prevent surprizes. The word is given out in an army every night to the lieutenant, or major general of the day, who gives it to the majors of the brigades, and they to the adjutants; who give it first to the field officers, and afterwards to a serjeant of each company, who carry it to the subalterns. In garrisons it is given after the gate is shut to the town-major, who gives it to the adjutants, and they to the serjeants.

WORKS, *Opera*, in fortification, the several lines, trenches, ditches, &c. made round a place or army, or the like, to fortify and defend it.

WORLD, *Mundus*, the assemblage of parts which compose the universe. *See Universe.*

WORMS, in the Linnæan system of nature, a class of insects of the order of the apteria, and of the class of the anathra. The distinguishing character of this class is, that they have the muscles of their body affixed to a solid basis. The several species of worms are very numerous; as the chætia, or the hair-worm,

WOU

called also the guinea worm; the ascæus, the lumbricus or the earth worm; and sea-worm; the tania, or tape-worm; the sicyania or gourd worm; the iulus or gally-worm, &c.

WORMS, *Lumbrici*, or *Vermes*, in medicine, certain living animals of various figures, structures, and bulks, which are formed in the intestines, from the seeds of some insects taken in with the alimentis.

WORM-SEED, a hot, bitter, drying kind of seed, often given to destroy worms in the human body.

WORMWOOD, *Asinthium*, in botany. *See Asinthium.*

WORSHIP of God, the offering up of adoration, prayer, praise, thanksgiving and confession to God, as our creator, benefactor, lawgiver and judge.

WORSTED, a kind of woollen thread, which, in the spinning, is twisted harder than ordinary. It is chiefly used either wove or knit into stockings, caps, gloves, or the like.

WOULDING, a sea-term for the winding of ropes round a mast or yard of a ship, that has been strengthened by a piece of timber nailed to it.

WOUND, *Vulnus*, in medicine and surgery, is frequently defined to be a violent solution of the continuity of the soft external parts of the body, made by some instrument. Others take a greater latitude in defining it, and call every external hurt of the body, by what cause soever produced, a wound. On the other hand, some are of opinion that unless the injured parts of the body are divided by some sharp instrument, as by a sword or knife, it is by no means to be called a wound; but notwithstanding, it is certain that those wounds which are produced by blunt instruments may properly enough be called wounds, whence Heister distinguishes two different kinds of wounds, the one made by acute, the other by blunt instruments.

Cure of WOUNDS. Since a wound is a solution of the continuity of the parts of the body, the reunion of those parts seems to be the principal intention; but since wounds are of very different kinds, some slight, and others of great consequence, in proportion to this difference, so will the manner of prosecuting this intention differ.

The cure of slight wounds is generally performed with great ease, by applying a small portion of lint to the part, well saturated with spirit of wine, oil of eggs, turpentine,

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turpentine, basilicon, the balsam of Arcæus, of Peru, &c. securing the dressings with a plaster, and renewing them once in a day or two; by this means, the lips of the wound will presently agglutinate.

Wounds which are attended with some danger, are to be treated as follows: in the first place, the wound is to be cleansed from all extravasated blood, fordes, &c. In the next place, if a bullet, the point of a sword, any part of the clothing, a piece of glass, or any other foreign body, shall remain in the wound, it is to be removed with the fingers, or with proper instruments for the occasion.

The hamorrhage is to be stopped at the first dressing; the divided parts are to be brought as near each other as possible; and their situation is to be so maintained, that the cicatrix which is left may appear even.

The method of treating a cut, or such a wound as is made by a cutting instrument, where no part of the flesh is taken off, and the accident happens to the external parts of the body, and does not penetrate deep, after the wound is cleansed, it should be dressed with the same vulnerary balsam, and the lips of the wound should be closed, and kept in that situation. This is done after different methods, according to the difference of the wound; as,

1. It is to be done by placing the wounded part in a proper posture; that is, as soon as the wound is dressed, the part should be placed in such a situation, that the divided parts may be most likely to keep in constant contact.

2. By a proper bandage, tying up the parts so that the lips may meet, and thereby easily unite.

By a proper suture, which differs according to the difference of the wound, but may be generally divided into the dry and bloody suture; the dry, or as some call it, the bastard suture, is the application of sticking plasters, to keep the lips of the wound united; the bloody, or true suture, is performing the same thing with a needle and thread. See *suture*.

WREATH, in heraldry, a roll of fine linen or silk, like that of a Turkish turban, consisting of the colours borne in the escutcheon, placed in an achievement between the helmet and the crest, and immediately supporting the crest. See *Crest*, &c.

WRECK, or *Ship-Wreck*, in law, is when a ship perishes on the sea, and no person escapes alive out of it. In this

W R E

case, if the ship so perished, or any part thereof, or the goods of the ship come to the land of any lord, and are left there, the lord shall have the same, as being a wreck of the sea: but if any single person, or even a dog, or other living creature, escape alive out of the ship, the party to whom the goods belong, may come within a year and a day, and proving the goods to be his, he shall have them again. And it is held, that they are no wrecks so long as they remain at sea, within the jurisdiction of the admiralty.

It is enacted by 12 Ann. c. 18. that if any wreck happen by any fault or negligence of master or mariners, the master must make good the loss; but if the same was occasioned by tempest, enemies, &c. he shall be excused: making holes in ships, or doing any thing wilfully tending to the loss thereof, is by that statute declared felony.

WRECK, in metallurgy, a vessel in which the third washing is given to the ores of metals.

• WREN, SIR CHRISTOPHER, a great philosopher and architect, was the son of Christopher Wren, dean of Windsor, and was born at London the eighth of October, 1632. He studied at Wadham College in Oxford, where he took the degree of Master of Arts in 1653, and was chosen fellow of All Souls college there. When very young, he discovered a surprising genius for the mathematics, in which science he made great advances before he was 16 years old. In 1657 he was made professor of astronomy at Gresham college, which he resigned in 1660, on his being chosen to the Savilian professorship of astronomy in Oxford; he was the next year created doctor of laws, and in 1663 elected fellow of the Royal Society. He was one of the commissioners for the reparation of St. Paul's, and 1665 travelled into France, to examine the most beautiful edifices there, where he made many curious observations. At his return to England he drew a noble plan for rebuilding the city of London, after the fire, which he presented to parliament, and, upon the decease of Sir John Denham, in 1668, was made surveyor-general of his majesty's works; and, from this time, had the direction of a great number of public edifices, by which he acquired the highest reputation. He built the magnificent theatre at Oxford; St. Paul's cathedral, the churches of St. Stephen Walbrook, and St. Mary-le-Bow,

the Monument, the modern part of the palace of Hampton-court, Chelsea-college, one of the wings of Greenwich-hospital, &c. He was president of the Royal Society; one of the commissioners of Chelsea-college; and twice member of parliament, first for Plymouth, and then for Melcomb Regis. But in 1718 was removed from his place of surveyor-general. He died the 25th of February, 1723, aged 91, and was interred in the vault under St. Paul's. This great man also distinguished himself by many curious inventions; and discoveries in natural philosophy.

WRESTLING, a kind of combat or engagement between two persons unarmed, body to body, to prove their strength and dexterity, and try which can throw his opponent to the ground.

It was the custom for the Athletæ to anoint their bodies with oil, to give the less hold to their antagonist. Icyenrus ordered the Spartan maids to wrestle in public, quite naked, in order to break them of their too much delicacy and niceness, to make them appear more robust, and to familiarize the people to such necessities.

WRIST, *Carpus*, in anatomy, a part of the hand, consisting of eight small, unequal, and irregular bones; all which taken together, represent a sort of grotto, of an irregular quadrangular figure, and connected principally with the basis of the radius. See the article *Hand*.

WRIT, in law, signifies in general the king's precept in writing under seal, issuing out of some court, directed to the sheriff, or other officer, and commanding something to be done in relation to a suit or action, or giving commission to have the same done.

WRITER of the tallies, an officer of the Exchequer, being clerk to the auditor of the receipt, who writes, upon the tallies, the whole letters of the teller's bill.

WRITING, the art or act of signifying and conveying our ideas to others, by letters, or characters, visible to the eye. See *Character*, *Letter*, *Word*, &c.

Writing is now chiefly practised among us by means of pen, ink, and paper; though the ancients had other methods.

WRONG, in a logical sense. See *Error*, *Falschhood*, *Truth*, &c.

WYCH-HOUSE, a house in which salt is boiled.

WYCHERLY, WILLIAM, a great comic poet, was the son of Daniel

Wycherly, of Cleve, in Shropshire, Esq; and was born in 1640. A little before the restoration he became a gentleman commoner of Queen's-College, Oxford; but left that university without being matriculated. He afterwards entered into the Middle-Temple; but soon left the dry study of the law, and engaged in pursuits more agreeable to his own genius. Upon his writing his first play, intitled *Love in a Wood*, he became acquainted with several of the celebrated wits, both of the court and city. He had an intrigue with the dutchess of Cleveland, king Charles the Second's mistress, and though the duke of Buckingham considered him as his rival, he was so pleased with him on being introduced into his company, as to forget his resentment, and being master of the horse to the king, and colonel of a regiment, soon after made him one of his equesters and captain lieutenant of his own regiment. Mr. Wycherly, who before this time had written *The Gentleman Dancing Master*, his *Plain Dealer*, and his *Country Wife*, was also in such favour with king Charles, that at length happening to fall sick, his majesty did him the honour to visit him, when finding his fever abated, but his body extremely weakened, he ordered him, as soon as he was able, to go to the south of France for the recovery of his health, and assured him, that he would order him five hundred pounds to be paid to defray his expences. Mr. Wycherly accordingly went to Montpellier, and returned to England in the latter end of the Spring following, entirely restored to his former vigour, both of mind and body. The king received him with the utmost marks of favour, and shortly after his arrival, told him, that he had a son, who he was resolved should be educated like the son of a king, and that he could make choice of no man so proper to be his governor as Mr. Wycherly; and for that service he should have one thousand five hundred a year paid him, and that, when his office was expired, he would set him above the malice of the world and fortune. Immediately after these gracious offers, Mr. Wycherly went down to Tunbridge, where he became acquainted with the countess of Drogheda, a rich and beautiful widow, and on their return to town married her, without acquainting the king: this brought him into disgrace with his majesty. The countess of Drogheda settled her whole fortune upon him; but his title being disputed after her death

W Y C

death, he was so reduced by the expences of the law, and other incumbrances, as to be unable to satisfy the impatience of his creditors, who threw him into prison; and the bookseller who printed his Plain-Dealer, by which he got almost as much money as the other gained reputation, was so ungrateful as to refuse to lend him twenty pounds in his extreme necessity. In that confinement he languished seven years: but at length King James going to see the above play, was so charmed with it, that he gave immediate orders for the payment of his debts, and even granted him a pension of two hundred pounds a year. But that prince's bountiful intentions were in a great measure defeated merely through Mr. Wycherly's modesty, he being ashamed to tell the earl of Mulgrave, whom the king had sent to demand it, a true state of his debts. He laboured under the weight of these difficulties till his father died, who left him six hundred pounds a year: but his estate was under uneasy limitations, he being only a tenant for life, and not being allowed to raise any money for the payment of his debts. Yet as he had power to make a jointure, he married in his old age, a young gentlewoman of one thousand five hundred

W Y T

pounds fortune, and died eleven days after the celebration of his nuptials, in December, 1713. His gaiety and humour continued with him till the last, and a little before his death he sent for his bride to come to him, and then told her with great solemnity, that he had but one request to make, which he desired she would not refuse him, since it should be his last. The lady promised that she would not, upon which he told her: "He desired she should never marry an old man again." Besides his plays above mentioned, he published a volume of poems in folio; but it met with no great approbation from the public: in 1728, his posthumous works in prose and verse were published by Mr. Theobald. He was intimate with Mr. Pope, Mr. Gay, and the other great poets of his time; and the lord Lansdowne observes, that as pointed and severe as he was in his writings, he had all the softness of the tenderest disposition, and was gentle and inoffensive to every man.

WYTE, or WITE, in our ancient customs, a pecuniary penalty or mulct. The Saxons had two kinds of punishments, were and wytte; the first for the more grievous offences, and the latter for the lesser ones.

X.

X A N

X, A double consonant, and the twenty-second letter of the English alphabet.

The letter X was not used by the Hebrews or ancient Greeks; for as it is not a simple but compound letter, the ancients, who used great simplicity in their writings, expressed it by *cs*, the letters which compose it; thus, instead of the modern *πλάξω*, the ancient Attics wrote *πλὰςω*.

X, is also a numeral letter, signifying ten, as it represents two V's placed one on the top of the other. When laid flat, thus *X*, it signifies a thousand; and when a dash is added over it, as *X̄*, it signifies ten thousand.

XANTHIUM, the lesser burdock, in botany.

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X I P

XERANTIMUM, the Austrian sneezewort, in botany.

XIPHIAS, the sword-fish, in ichthyology, a genus of fishes. The rostrum, or extremity of the head, is continued forward, with an extremely long point, of a depressed, or somewhat flattened figure, resembling the blade of a sword, and of a bony structure; the lower jaw is acute, and of somewhat a triangular figure; the body is oblong, and of a roundish figure, and is considerably thick in proportion to its length; the back is convex, and the sides are rounded; there is no belly fins, and on the back there is only one fin, which is very long, and lowest in the middle; the branchiostegic membrane on each side contains only eight bones. About fifteen feet in length is the size of a

3 L

moderately

X Y L

moderately large one, but not unfrequently it is met with much bigger.

XIPHOIDES, in anatomy, a cartilage adhering to the sternum; called also *cartilago ensiformis*. See *Sternum*.

XYLO-ALOES, or **ALOE-WOOD**, in pharmacy, a drug distinguished into three sorts; the calambac, the common lignum aloes, and calambour.

The calambac, or finest aloe-wood, called by authors, *lignum aloes prestantissimum*, and, by the Chinese, *sukhiang*, is the most resinous of all the woods we are acquainted with: it is of a light spongy texture, very porous, and its pores so filled up with a soft and fragrant resin, that the whole may be pressed and dented by the fingers like wax, or moulded about by chewing in the mouth, in the manner of mastic.

The *lignum aloes vulgare*, is the second in value. This is of a more dense and compact texture, and consequently less resinous than the other: there is some of it, however, that is spongy, and has the holes filled up with the right resinous matter; and all of it, when good, has veins of the same resin in it.

The calambour, or, as some write it, the calambouc, is also called *agalochum sylvestre*, and *lignum aloes Mexicanum*. It is a light and friable wood, of a dusky and often mottled colour, between a dusky green black, and a deep brown. Its smell is fragrant and agreeable, but much less sweet than that of either of the others; and its taste bitterish, but not so much acrid or aromatic as either of the two former. We meet with this very frequently, and in large logs; and these

X Y S

sometimes entire, sometimes only the heart of the tree, the cortical part being separated. This is brought from the island of Timor, and is the aloe-wood used by the cabinet-makers and inlayers.

XYLO BALSAMUM, a name which naturalists give to the wood of the tree which yields that precious gum known to the Latins by the name of *opobalsamum*, and to us by the name of balm of Gilead.

We have branches of this tree brought from Cairo; they are very straight, brittle, unequal, and full of knots; their bark is reddish without, and greenish within.

The *xylo-balsamum* is reputed good to strengthen the brain and stomach, and to expel poison. See *Balsam*.

XYLO-CASSIA, in the *materia medica*, the same with the *castia-signa*. See *Cassia*.

XYLOPIA, in botany, a genus of plants, whose flower consists of six sessile, linear, lanceolated, coriaceous petals, the three outward ones being larger: the stamina have no filaments, but consist of numerous anthers sitting on the germen: the fruit is a dry, roundish, unilocular drupe, containing a roundish kernel.

XYSTUS, among the Greeks, was a long portico, open or covered at the top, where the athletes practised wrestling and running: the gladiators, who practised therein, were called *xyfici*. Among the Romans, the *xystus* was only an alley or double row of trees, meeting like an arbour, and forming a shade to walk under.

Y.

Y

Y, The twenty-third letter of the English alphabet. The letter Y was not in the ancient Hebrew alphabet, though they were not without the sound of it in their *jod*, if the pronunciation of the ancient Jews was the same as the modern. The figure of the letter Y was doubtless derived from that of the V, for they seem to have been both the same letter in the most ancient Greek alphabet; for V is in the fifth line, and Y in

Y

the seventh of the Sigeian inscription, for the same letter.

Y is one of the ambigeneal letters, being a consonant at the beginning of words, and placed before all vowels; as *yarn*, *year*, *young*, &c. And, at the end of the words, it is a vowel, and is substituted for the sound of *i*, as in *my*, *desery*, *deny*, &c. Y, is also a numeral letter signifying 150, or according to Baronius, 159.

YACHT,

Y A W

YACHT, or **YATCH**, a vessel with one deck, carrying from four to twelve guns. See *Ship*.

YARD, a measure of length used in England and Spain, chiefly to measure cloth, stuffs, &c. It contains thirty-six inches. See *Measure*.

YARD-LAND, is taken to signify a certain quantity of land, in some countries being fifteen acres, and in others twenty; in some twenty-four, and in others thirty or forty acres.

YARDS of a Ship, those long pieces of timber which are made a little tapering at each end, and are fitted each athwart its proper mast, with the sails made fast to them, so as to be hoisted up, or lowered down, as occasion serves. See the article *Ship*.

YARD-ARM, that half of the yard that is on either side of the mast, when it lies athwart the ship.

YARDS, also denote places belonging to the navy, where the ships of war, &c. are laid up in the harbour. There are belonging to his majesty's navy, six great yards, viz.—Chatham, Deptford, Woolwich, Portsmouth, Sheerness, and Plymouth; these yards are fitted with several docks, wharfs, launches, and graving places, for the building, repairing, and cleaning of his majesty's ships, and therein are lodged great quantities of timber, masts, planks, anchors, and other materials; there are also convenient store-houses in each yard, in which are laid up vast quantities of cables, rigging, sails, blocks, and all other sorts of stores, needful for the royal navy.

YARE, among sailors, implies ready or quick: as, be yare at the helm; that is, be quick, ready, and expeditious at the helm. It is sometimes also used for bright by seamen: as, to keep his arms yare; that is, to keep them clean and bright.

YARN, wool, or flax, spun into thread, of which they weave cloth. See *Cloth*, *Wool*, &c.

YARRINGLE, a kind of instrument, or reel on which hanks of yarn are wound, to clues or balls. See *Reel*.

YAWNING, *Oscitatio*, an involuntary opening of the mouth, occasioned by a vapour, or ventosity, endeavouring to escape, and generally witnessing an irksome weariness, or an inclination to sleep.

YAWS, in the sea-language. A ship is said to make yaws when she does not steer steady, but goes in and out when there is a stiff gale.

Y A W

Yaws, a distemper endemial to Guinea and the hotter climates in Africa. It makes its first appearance in little spots on the cuticle, not bigger than a pin's point, which increase daily, and become protuberant, like pimples. Soon after, the cuticle frets off; and then, instead of pus or ichor, there appears white sloughs or fordes, under which is a small red fungus. These increase gradually, some to the size of a small wood-strawberry, others to that of a raspberry; others again exceed the largest mulberry, which in shape they very much resemble. In the mean time, the black hair growing in the yaws turns to a transparent white. See *Cuticle*, &c.

YEAR, *Annus*, the time the sun takes to go through the twelve signs of the zodiac. This is properly the natural or tropical year, and contains 365 days, 5 hours, and 49 minutes. As for the Gregorian, the civil, the solar or astronomical, the bissextile, and Platonic years, see them under the articles *GREGORIAN*, *CIVIL*, &c.

The Julian year derives both its name and institution from Julius Cæsar the dictator; for before his time the form of the Roman year was so corrupted by the indiscretion of the pontiffs, in whose hands the power of intercalation was lodged, that the winter-months fell back to the autumn, and those of autumn to the summer. To remedy these inconveniences, the dictator not only added to that year, in which he set about the reformation of the calendar, the common intercalation of 23 days, between the 23d and 24th days of February, pursuant to Numa Pompilius's institution, but likewise 67 days more between November and December; so that this year contained 445 days. This done, he instituted a solar year, of 365 days and 6 hours, pursuant to what he had learned from the Egyptians, and every fourth year he ordered a day to be added. See *Julian Period*.

The Greeks counted their year by the motion of both sun and moon; and finding that there was 11 days difference between the lunar and solar years, at first they added an intercalary month every two years, containing 22 days. Afterwards, considering the 6 hours also, they put their embolism off 4 years, and then making the 3 first years to contain 354 days each, this made the fourth year to have 399 days; and to make this intercalation the more remarkable, they instituted the Olympic games on every such

Y E O

fourth year; whence came the computation by Olympiads. See *Olympiad*.

The Syriac year consists of 365 days and 6 hours, being divided into 12 months of equal extent with those of the Julian year, to which they correspond. This year begins October 1, so that the month called Tishrim, agrees with our October. The astronomical year is twofold, viz. the tropical and sidereal; by the latter, is meant that space of time which the sun takes in departing from a fixed star, and returning to the same again. This year consists of 365 days, 6 hours, and ten minutes.

As the form of the year is various among different nations, so likewise is the beginning; the Jews began their ecclesiastical year with the new moon of that month whose full moon happens next after the vernal equinox; and every seventh year they kept as a sabbatic year, during which they let their land lie at rest. The ancient Jewish year was made to agree with the solar year, by the adding of 11, and sometimes of 12 days, at the end of the year, or by an embolismic month.

The beginning of the Athenian or Attic year, was reckoned from that new moon, the full moon of which comes next after the summer solstice.

The Mahometans begin their year when the sun enters Aries; the Persians, in the month answering to our June; the Chinese, and most of the Indians, begin it with the first moon in March.

YELLOW, one of the original colours of light. See *Colour* and *Light*.

YELLOW, in dyeing, one of the five simple and mother colours.

YELLOWs, a disease in a horse, much the same with that called the jaundice in man.

YEOMAN, the first or highest degree among the plebeians of England, next in order to the gentry. The yeomen are properly freeholders, who having land of their own, live on good husbandry.

YEOMAN is also a title of office in the king's household, of a middle place or rank between an officer and a groom.

YEOMAN of the Guard were anciently two hundred and fifty men of the best rank under gentry, and of larger stature than ordinary, each being required to be six feet high. At present there are but one hundred yeomen in constant duty, and seventy more not in duty; and as any of the hundred dies, his place is supplied out of the seventy. They go

Y O R

dressed after the manner of king Henry VIII's time. They formerly had diet as well as wages, when in waiting; but this was taken off in the reign of queen Anne.

YEAST, **YEAST**, or **BARM**, a head, or scum rising upon beer or ale, while working or fermenting in the vat. It is used for a leaven or ferment in the baking of bread as serving to swell or puff it up very considerably in a little time, and to make it much lighter, softer, and more delicate. When there is too much of it, it renders the bread bitter.

YEW, *Taxus*, in botany. See *Taxus*.

YOAK, or **YOKE**, in agriculture, a frame of wood, fitted over the necks of oxen, whereby they are coupled together, and harnessed to the plough.

Sea-YOAK.---When the sea is so rough, that the helm cannot be governed by the hands, the seamen make a yoak, to steer by; that is, they fix two blocks to the end of the helm, and reeve two small ropes through them, which they call, *Sea-Yoak*, by having some men at each tackle, they govern the helm by direction. They have another way of making a sea-yoak, by taking a double turn about the end of the helm with a single rope, the ends being laid to the ship's sides, by means of which they guide the helm.

YOLK, or **YELK**, in natural history, the yellow part in the middle of the egg.

YORK, a city of Yorkshire, of which it is the capital, with an archbishop's see, and three markets, on Tuesdays, Thursdays, and Saturdays; as also four fairs; on Whit-Monday, July 10, August 12, November 22, and every Thursday in the year, for horses, horned cattle, sheep, and linnen-cloth, besides two shows for horses half yearly. It is seated on the river Ouse, and is usually reckoned the second city in England; though Bristol now claims that honour, on account of its extensive trade. It is certainly a very ancient city, and has undergone various revolutions; but is still a large handsome place, adorned with many fine buildings, both public and private. It is very populous, and contains thirty parish churches and chapels, besides its cathedral or minster, which is a most magnificent structure. It is divided by the river into two parts, which are united by a stately stone bridge of five arches. It is surrounded by a strong wall, on which are many turrets, or watch houses; and there are four gates;

Y O R K

gates, and five posterns. It is a city and county of itself, enjoys large privileges, sends two members to parliament, and has the title of a duchy. It is governed by a lord-mayor, twelve aldermen, and other officers. It is sixty-five miles S. by E. of Durham, eighty-one E. of Lancaster, and one hundred and ninety-one N. by W. of London.

* **YORKSHIRE**, an English county, bounded on the east by the German ocean, on the north by the county of Durham, on the west by Westmoreland and Lancashire, and on the south by Derbyshire, Nottinghamshire, and Lincolnshire. It is the largest county in England, being 90 miles in length from east to west, and 75 in breadth from North to South. It contains 106,150 houses, 603,690 inhabitants, 363 parishes, 57 market-towns, and sends 30 members to parliament. The principal rivers are the Tease, that divides this county from Durham, the Swale, the Yourc, the Nid, the Ouse, the Warf, the Aire, the Calder, the Darwant, the Don, and the Hull, besides the great river Humber, which is made up of many rivers. The air is in general temperate, but pretty cold on the tops of the hills, and on the borders of Durham. The soil is various. It is divided into three ridings, the north, west and east; besides which there is a fourth division, called Richmondshire, as also Cleveland, Craven, and Holderness, which are all included in the three ridings. The productions and manufactures are various, and there are mines of iron, lead, and coal. York is the principal city.

* **YORK, NEW**, one of the British colonies in North-America, is bounded by Canada on the north, New England on the east, the sea on the south, and Pensilvania on the west, being 200 miles in length from north to south, and scarce 60 in the broadest part. This country produces corn, and abounds in cattle and a good breed of horses; but the inhabitants are chiefly employed in the fishery of cod-fish and whales. They supply the Caribbee islands with salt beef, pork, salt-fish, horses, and timber; likewise they export a great deal of dried and salted fish to Europe, and bring logwood, train-oil, and whale-bone to England; from whence they are supplied with most of their cloathing, furniture, and tools. The governor and council are appointed by the king; but they elect their own representatives. The established religion is the same as the church of England,

Y O U

though other persuasions are tolerated, and have their respective places of worship allowed them.

* **YOUNG**, Dr. Edward, a celebrated poet, was the son of a divine of the church of England, and received the first part of his education from his father. He afterwards studied at All-Souls college, at Oxford, when designing to follow the civil law, he took a degree in that profession. While in this situation, he wrote his poem on the last day, and this was soon followed by his poem entitled, *The Force of Religion*; or, *Vanquished Love*. These two poems are, however, stiff and unpleasing, but they occasioned his being taken notice of by several of the nobility; and on his entering into orders, he was made one of the king's chaplains, and afterwards obtained the living of Welwyn, in Hertfordshire, worth above 500 l. per annum, but he never rose to higher preferment. For some years before the death of the late prince of Wales, Dr Young attended his court pretty constantly, but upon his decrease all his hopes of church preferment vanished; however, upon the death of Dr Hales, he was taken into the service of the princess dowager of Wales, and succeeded him as her privy chaplain. When pretty far advanced in life, he married the lady Elizabeth Lee, daughter of the late earl of Litchfield. This lady was a widow, and had an amiable son and daughter, who both died young. What he felt for their loss, as well as for that of his wife, is finely expressed in his *Night-Thoughts*, in which the young lady is characterized under the name of Narcissa; her brother by that of Philander, and his wife, though nameless, is frequently mentioned; and he thus, in an apostrophe to death, deploras the loss of all three:

Insatiate archer, could not once suffice!

Thy shaft flew thrice, and thrice my peace was slain.

And thrice ere thrice yon moon renew'd her horn.

His satires, intitled *Universal Passion*, are admired, and were written early in life. He also wrote a *Paraphrase on the Book of Job*; but his *Night-Thoughts* are justly esteemed his master-piece. He likewise wrote three tragedies, *Eufiridis*, the *Revenge*, and the *Brothers*, with several compositions in prose, as the *Centaur not fabulus*, *Conjectures on original Composition* and a work intitled *Resignation*.

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Z, The twenty-fourth and last letter, and the nineteenth consonant of the English alphabet; the sound of which is formed by a motion of the tongue from the palate downwards and upwards to it again, with a shutting and opening of the teeth at the same time.

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A ZONE

Z O P

A zone is the fifth part of the surface of the earth, contained between two parallels.

The zones are denominated torrid, frigid, and temperate.

The torrid zone is a fascia, or band surrounding the terraqueous globe, and terminated by the two tropics. Its breadth is $46^{\circ} 58'$.

The equator, running through the middle of it, divides it into two equal parts, each containing $23^{\circ} 29'$. The ancients imagined the torrid zone uninhabitable.

The temperate zones are two fasciæ, or bands, environing the globe, and contained between the tropics and the polar circles: the breadth of each is $43^{\circ} 21'$.

The frigid zones are segments of the surface of the earth, terminated, one by the antarctic, and the other by the arctic circle: the breadth of each is $46^{\circ} 58'$.

ZOOLOGY, *ζωολογία*, the science of animals. Artedi observes, that this makes one of the three kingdoms, as they are called, of natural history, the vegetable and the mineral being the two others. In these, however, there is this difference made by writers, that while vegetables and minerals are treated of together, as all of a piece in each, the subjects of zoology are divided; and it is made to compose, as it were, several kingdoms.

ZOOPHORIC, or ZOOPHORIC COLUMN, a statuary column, or a column that bears and supports the figure of an animal.

ZOOPHYTON, or ZOOPHITE, in natural history, a kind of intermediate body, partaking both of the nature of a sensitive and a vegetable. See *Sensitive Plant*.

ZOOTOMY, the art of dissecting animals, or living creatures, being the same with anatomy, or rather comparative anatomy.

ZOPISSA, naval pitch, a kind of mixture of pitch and tar, scraped off ships that have been a long time at sea. This

Z Y M

matter, by being gradually penetrated by the salt of the sea, becomes partaker of its qualities, and being applied to the body externally, is found to be resolute and desiccative.

ZOSTERA, in Botany, a genus of plants, whose flower hath no corolla; the cup consists of a plane linear spadix, and contains a great number of very short filaments, topped with ovate oblong antheræ; the pericarpium is membranaceous, and contains an ovate seed.

ZYGÆNA, the balance fish, in ichthyology, a species of squalus, with a very broad, transverse, hammer-like head.

ZYGOMA, in anatomy, a bone of the head, otherwise called os jugale, being no single bone, but an union or assemblage of two processes, or eminences of bones; the one from the os temporis, the other from the os maxillæ; these processes are hence termed the zygomatic processes, and the suture that joins them together is denominated the zygomatic suture.

ZYGOMATICUS, in anatomy, a muscle of the head, arising from the os zygoma, whence its name, and terminating at the angle of the lips.

ZYGOPHYLLUM, bean-capers, in botany, a genus of plants, the corolla whereof is composed of five petals, broadest at the top, obtuse, emarginated, and larger than the cup; the nectarium consists of ten convergent leaves, and includes the germen: the fruit is an oval pentagonal capsule, formed of five valves; containing five cells, with septa adhering to the valves: the seeds are numerous, roundish, and compressed: the figure of the fruit is subject to variation, and there is a species in which the parts of fructification are a fifth less.

ZYMOSIMETER, an instrument proposed by Swammerdam, to measure the degree of fermentation occasioned by the mixture of different matters, and the degree of heat which those matters acquire in fermenting; as also the heat or temperament of the blood of animals.

F I N I S.



